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In This Issue

Halifax in Trade — ARCHIBALD MACMECHAN

Trail Metallurgical Plant — PHILIP H. SHEFFIELD

Lower Fort Garry — ROBERT WATSON

Agra and the Taj Mahal — E. C. WOODLEY

This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustration, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

The British standard of spelling is adopted, substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1929.

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From a painting by Norman Wilkinson.

Fishing in the Atlantic, off the Nova Scotian coast.

Reproduced by courtesy of Canadian Pacific Railway Company.

Canadian Geographical Journal

Halifax in Trade

By ARCHIBALD MACMECHAN

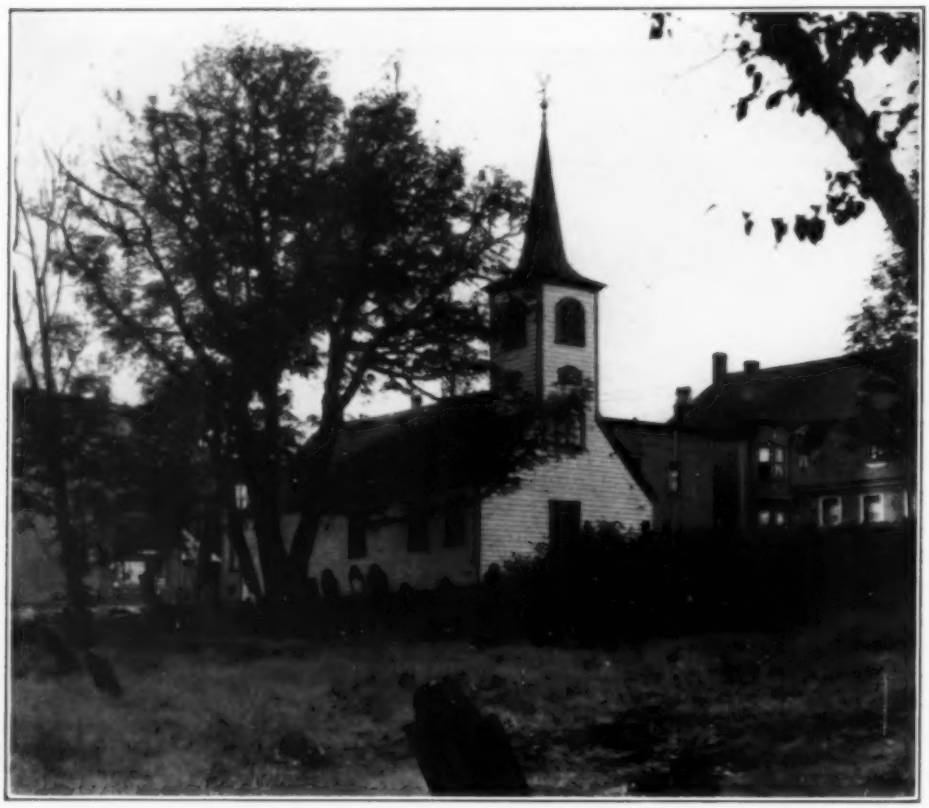
HALIFAX was not founded for trade or commerce, but for war. During a brief lull in the secular strife between France and England, a rude new city was hewn out of the spruce wood on the steep western shore of Chebucto Bay and named for the Chairman of the Lords Commissioners of Trade and Plantation. It was designed to counterpoise the great French fortress of Louisbourg in Ile Royale. The first settlers were trade-fallen soldiers and sailors, who soon showed themselves to be unfit for the humdrum occupations of civil life. But the Seven Years War broke out, and, at once, Halifax proved its value as a naval base. Under its guns assembled the mighty armadas which reduced Louisbourg in 1758 and Quebec in the following year. In truth, Halifax has justified the wisdom of its founders in every war of the Empire since Morris and Brewse laid out the half-dozen original streets in 1749.

Yet the colony of Nova Scotia and its capital city were long regarded as a costly failure. Oliver Goldsmith lamented the sad fate of "our hardy veterans" sent out to perish on these inhospitable shores; and Burke denounced the whole thing as a "job". In 1780, the Irish Demosthenes attacked the Lord Commissioners of Trade and Plantation, and all their works. "The Province of Nova Scotia," he declared, "was the youngest and favourite child of the board. Good God! what sums has the nursing of that ill-thriven, hard-visaged and ill-favoured brat cost to this wittol nation!"

ARCHIBALD MACMECHAN, B.A., PhD., F.R.S.C., LL.D.,

Professor of English Language and Literature at Dalhousie University, Halifax, N.S., was born in 1862 and educated at Picton Union School, Hamilton, Collegiate Institute and University of Toronto. Following his graduation he became Modern Language Master at the Galt Collegiate Institute, and in 1886 took up study of German at Johns Hopkins University, obtaining his Ph.D., in 1889. In 1920 he was elected Fellow, Royal Society of Canada, and the same year the University of Toronto conferred on him the honorary degree of LL.D. Vice-President of the Maritime Branch of the Canadian Authors' Association, and the author or editor of numerous publications.

General disparagement of Nova Scotia persisted far into the 19th century. Whig pamphleteers jeered at the Tory province as "Nova Scarcity." In New England, "Go to Halifax!" was a curse; for the treatment of American prisoners in the Halifax hulks, as in Dartmoor, was a rankling memory. Haliburton wrote his patriotic "Historical and Statistical Account" to refute the manifold slanders about the soil and climate of his dearly-loved native province. Even now persons may be found who fail to distinguish Nova Scotia from Nova Zembla and think of it vaguely as lying somewhere within the Arctic Circle. The founding of Halifax marks the first serious effort of Britain to settle the province. Different waves of immigration followed one another; "poor Palatines" from Germany, farmers and fishermen from New England, Irish from Ulster, and Scots from both the Highlands and Lowlands. Not long after the Expulsion, exiled Acadians began to find their way back to the district now named Clare. The province slowly filled up, but no city arose to rival the capital in population or importance. Halifax expanded with every war and shrank with every peace. Down to the removal of the Imperial garrison, it was a commonplace to say, Halifax lived on the Army and Navy.



Canadian National Railways photograph.

The Little Dutch Church, Halifax. Built in 1755 to accommodate the "poor Palatines," who afterwards founded Lunenburg.

In the old days, when commissions were purchased, only those with private means could afford to be officers. When Halifax station was a major-general's command with a full brigade of infantry, artillery and other services, the officers, public officials and merchants constituted a small but wealthy and aristocratic society. Its wealth may be inferred from the advertisements in the contemporary Halifax newspapers. Along with staples and supplies of all kinds, the local merchants imported articles of luxury, expensive dress materials such as silks, broadcloths, gold and silver lace, delicacies for the table such as Turkey figs, olives, olive oil, confections of every description, French prunes, curry powder, jewellery, such as gold and silver watches, rings, brooches, pearl, topaz, and emerald ear-rings. Silver spurs and knee-buckles, as well as playing-cards, violin strings, silk umbrellas, fowling-pieces, bronze ornaments, perfumery, musical instruments, pictures, prints, books (often in French, such as the works of Rousseau), mahogany furniture figure in the old-time advertisements, and they tell their own tale. Stress is laid on the "fashionable" quality of the goods. Only the best was acceptable to the Halifax aristocracy. One merchant, after enumerating the kinds of goods imported in 1806, adds, "Thomas Heaviside has been induced, in describing the above particulars, to repeat the words 'curious,' 'fashionable' and 'elegant' very often." Drinkables of all kinds, French and Spanish wines, liqueurs, Jamaica rum, Dublin stout, London ale, were imported in quantities and must be classed, perhaps, as staples or necessities of life. Halifax never was a "miserable fishing village," as the American magazine writer fancied.

When Burke demolished the Lords of Trade in 1780, he said that Nova Scotia had cost the British taxpayer £700,000.

Canadian National Railways photograph.

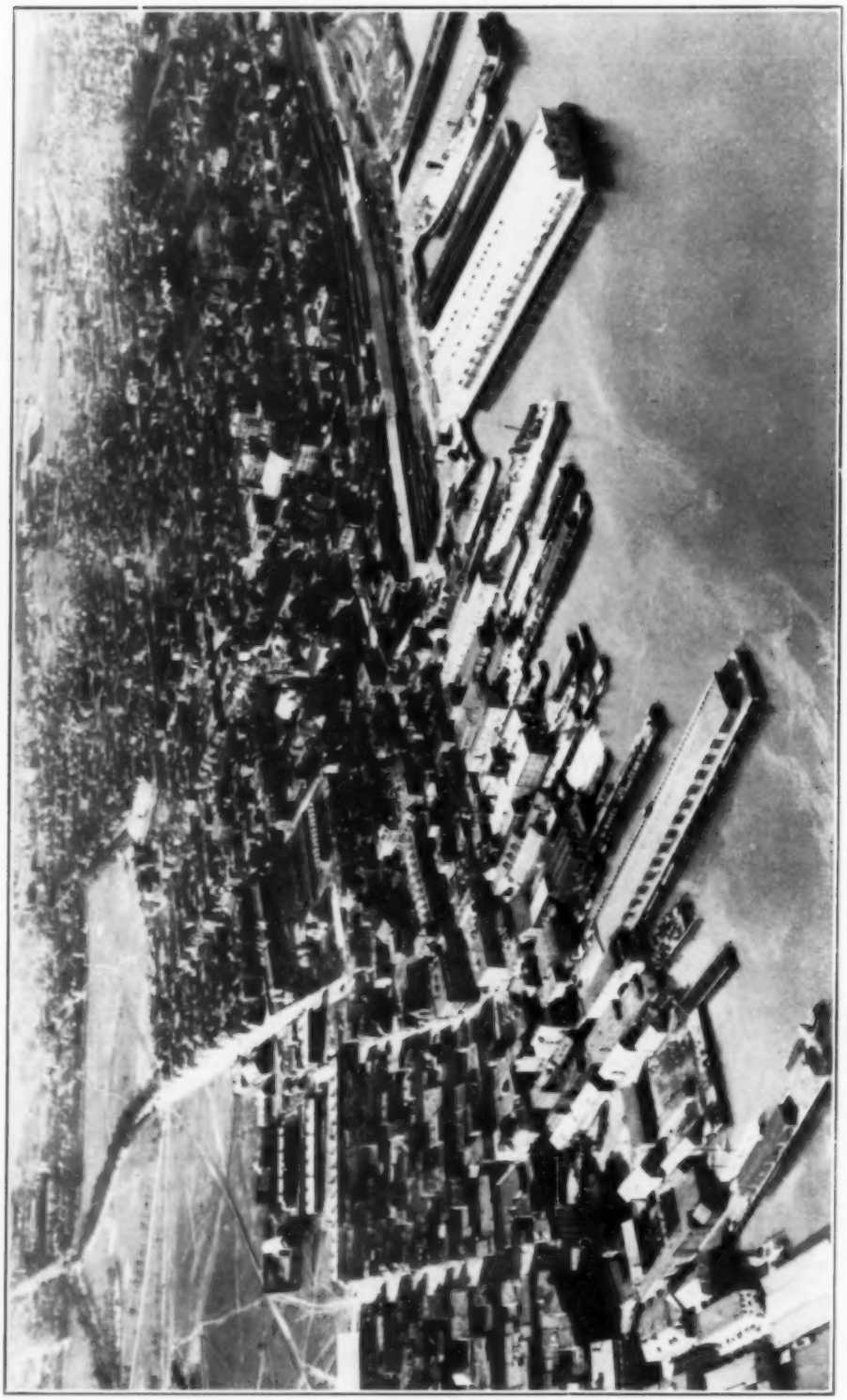
The star-shaped citadel at Halifax suggests much history of the century and a half during which it was a garrison city and the naval base of the North Atlantic Squadron.

"To this day," he continued, "it has made no repayment. It does not even support those offices of expense which are miscalled its government." The reproach was just. Only during the wars with the French Republic and Napoleon did Nova Scotia begin to prosper as a government. In 1797, the accounts show a balance on the right side, which is almost doubled the following year. By 1815, it had grown, in spite of increased expenditure, to £60,000. Provincial wealth as well as provincial pride is manifest in such stately public structures as Province House and Government House.

Of this period, J. Macgregor wrote, in 1828: "During the last war the vessels and property captured from the enemy on the coast of America were sent into Halifax for condemnation. At this period money was exceedingly abundant; everyone who possessed common sagacity accumulated considerable sums, and Halifax became the theatre of incessantly active enterprise and commercial speculations."

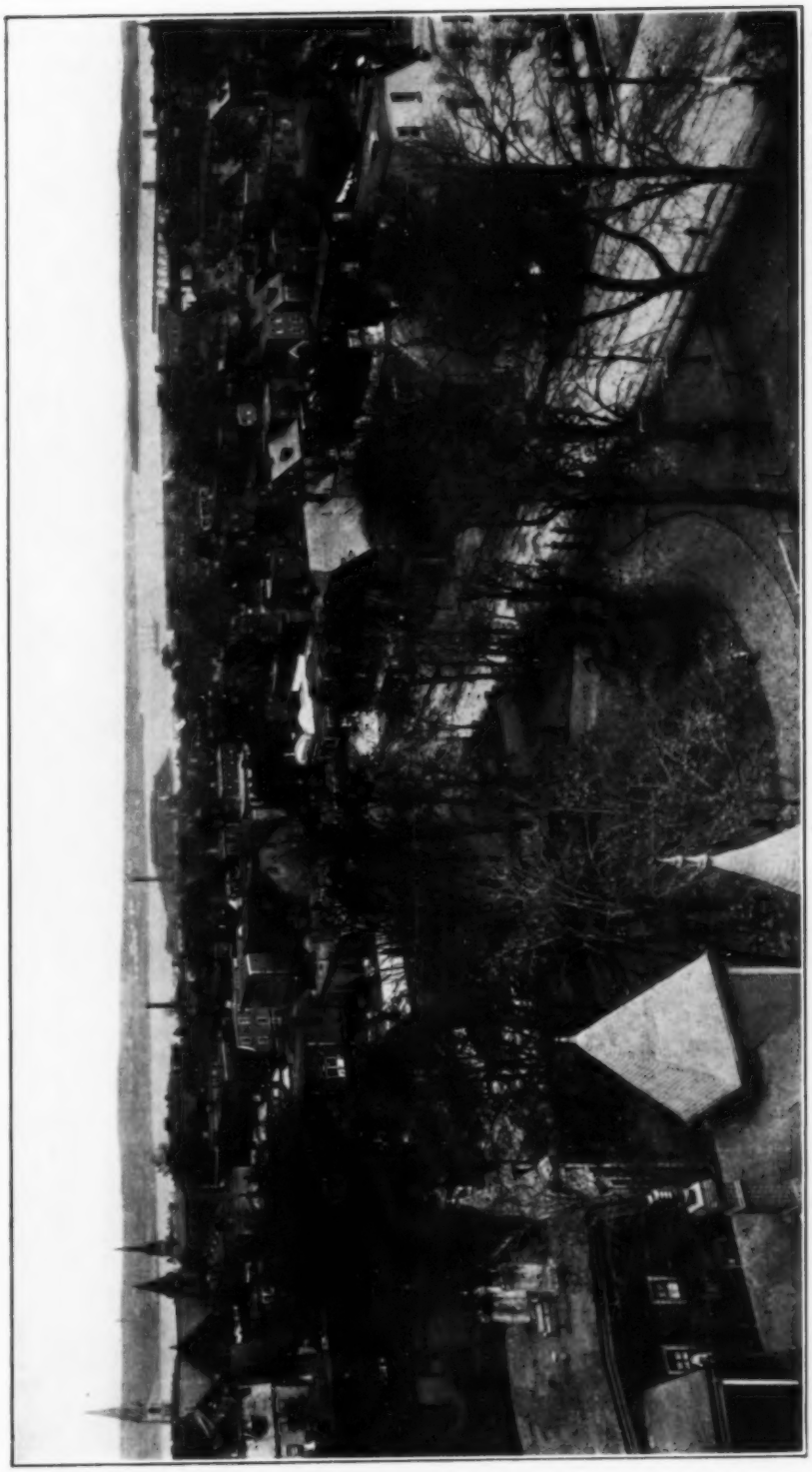
The climax was reached in the War of 1812, when a fleet of more than 100 sail was based on Halifax. The value of their custom to the city, the task of supplying their necessities, may easily be imagined. Murdoch confirms Macgregor's statement. "While war raged elsewhere Nova Scotia was peaceful, busy, and prosperous (on a limited scale) and free from disturbance, agitation and crime."

The war-born prosperity of Halifax induced firms in London, Liverpool and Glasgow to establish branches here. There was money to be made, and Halifax became "a Scotch colony." All the importing was done by these firms. For many years and far into the 19th century Halifax was the mart and distributing point for the whole province. In those good, old, leisurely days, before Confederation, the country merchant



Royal Canadian Air Force photograph.

Water front of Halifax, north end. Extreme right shows part of area devastated by the explosion of the S.S. Mont Blanc, Dec. 6th, 1917. Now entirely rebuilt.



Canadian Pacific Railway photograph.

Halifax from the roof of the Lord Nelson Hotel, looking east to the harbour. George's Island in the centre; McNab's Island to the extreme right. Founded in 1749 by the Hon. Edward Cornwallis, Halifax was named for the Earl of Halifax.

travelled up to the capital and called on the head of the wholesale firm. He was accorded an audience in the great man's private office, and, after a glass of wine and some general conversation, asked permission to see the goods he needed for the next season. Business was a matter for gentlemen. When the Intercolonial Railway was built, the travelling salesmen of the Montreal and Toronto firms had easy access to the province. They called on the country merchant in his own store with their samples and solicited his orders. Halifax lost its ancient monopoly, and gradually most of the wholesale firms put up their shutters. This was one of the consequences of Confederation.

To hark back to the Golden Age of Halifax in trade, the final years of the war with Napoleon, it was then that many Halifax fortunes were made. Tremaine, Grassie, Hartshorne, Lawson, Kidston, Coggswell, were firms of repute, when the 19th century was young. These old-time merchants had an enviable name for uprightness and fair dealing. Their word was as good as their bond. Unpaid debts were a disgrace. Fraudulent bankruptcy was unheard of. Old-fashioned virtues of thrift, industry and fair dealing were the secrets of their success. The home of the business man was over his shop. He rose early and worked late. One clerk sufficed, where now half a dozen stenographers are needed. Business had something of the sanctity of religion.

The war was followed by a period of depression, which, according to Chittick, lasted 20 years and culminated in a money panic in 1837. The removal of the troops and the huge naval force immediately after the peace lowered the values of provisions, rents and real estate. Speculators were reduced to poverty. But apparently the solid merchants were not affected; they had "traded within their capital." During

(Continued on page 161)

Canadian National Railways photograph.

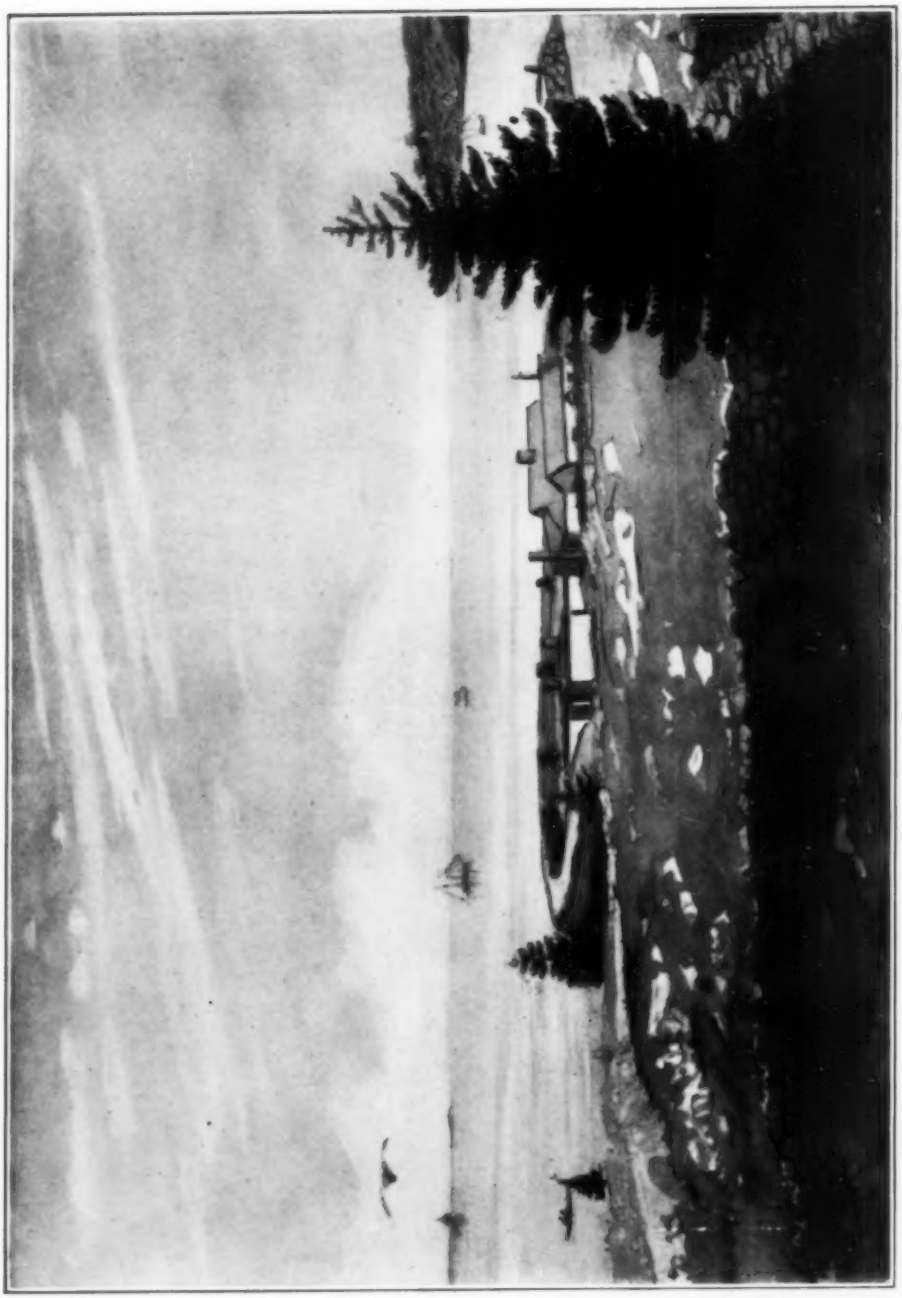
Herring Cove, a typical Nova Scotia fishing village, beloved by artists, the scene of Joe Cracker's heroic rescue of the men from H.M.S. Tribune.

Canadian Gov't Motion Picture Bureau photograph.

The Duke of Kent's clock tower, one of the historic landmarks of Halifax, has seen the harbour white with sails, in the days when Samuel Cunard made history with his fleet of wooden ships.

Canadian Gov't Motion Picture Bureau photograph.

Deepwater terminal, Halifax harbour, with Dartmouth shore in background. From pier 2 sailed tens of thousands of troops during the Great War.



"Point Pleasant Battery, etc., from my fields August 6th, 1842" (Halifax Harbour). From original painting, in the Public Archives of Canada, by Lieut.-Col. Cavalie Mercer, who commanded the Royal Artillery in Nova Scotia and lived for several years in a house in Point Pleasant Park.

George's Island in Halifax Harbour from Fort Massey, August 31st, 1841. Painting by Cavalie Mercer, in the Public Archives of Canada.

Canadian Gov't Motion Picture Bureau photograph.

A road in Point Pleasant Park, laid out by military engineers, who found the happy mean—they made nature accessible, but did not try to improve it.

Canadian Gov't Motion Picture Bureau photograph.

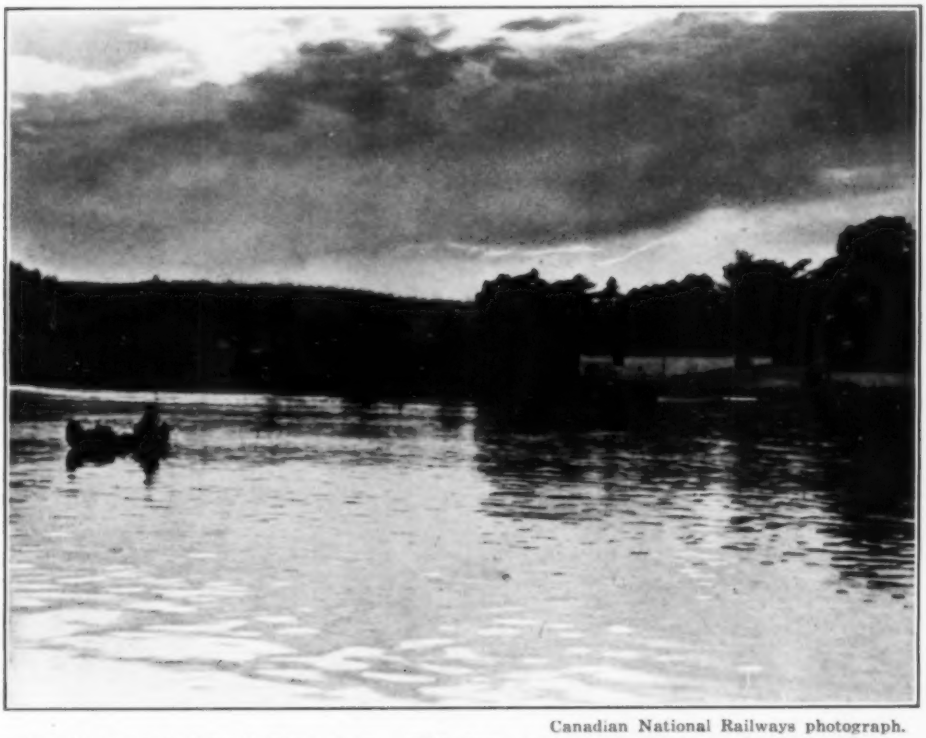
The City Building, erected in 1887 on the site of the first Dalhousie College, at the north end of the Grand Parade, opposite St. Paul's.

(Continued from page 156)

the administration of Sir John Kempt, there was only one business failure in Halifax. It was a time of large enterprise. The Halifax Banking Company was organized and the Shubenacadie Canal was built. It was during this time of business depression that Samuel Cunard rose to wealth and prominence.

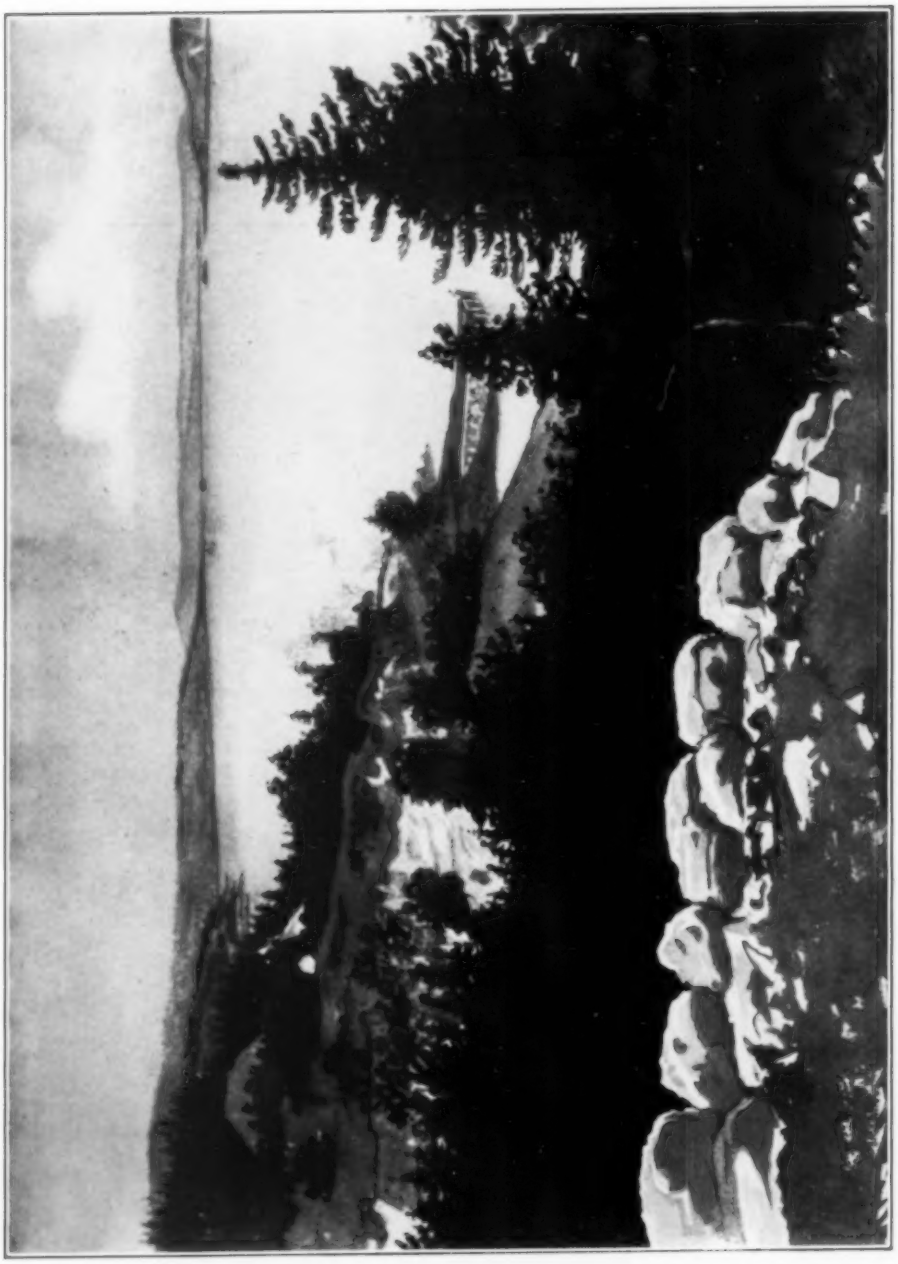
His father was of German descent and a carpenter by trade. He came from Philadelphia to Halifax with the Loyalist emigration at the end of the American Revolutionary War, and, in 1799 was appointed to the responsible position of master carpenter in Engineers Department. He was evidently thrifty, for, within 12 years of his arrival at Halifax, he purchased an important property on the water-front for £500 cash. This was the site of the Cunard wharf and warehouse, which became the centre of the West India trade.

Samuel, his second son, received a sound, elementary education, and, on leaving school, obtained a position as clerk in the Civil Branch of the Engineers Department. By 1813, he was in business with his father as the firm of "A. Cunard and Son." Apparently they both speculated in timber lands. In 1820, Abraham Cunard retired to a large farm in Rawdon, and the style of the firm was altered to "S. Cunard and Co." About the same time, Samuel Cunard went into the lumber business at Chatham, New Brunswick, sharing this important trade with Gilmore and Rankin of Glasgow. It was managed by his brothers Joseph and Henry. Ship-building, brick-making and general trading at Chatham and other river ports were other activities of the firm. Cunard made also large purchases of land in Prince Edward Island, amounting to more than 138,000 acres. He secured the monopoly of the tea trade for British North America, importing direct from Canton, and he became the agent for the General Mining Association,

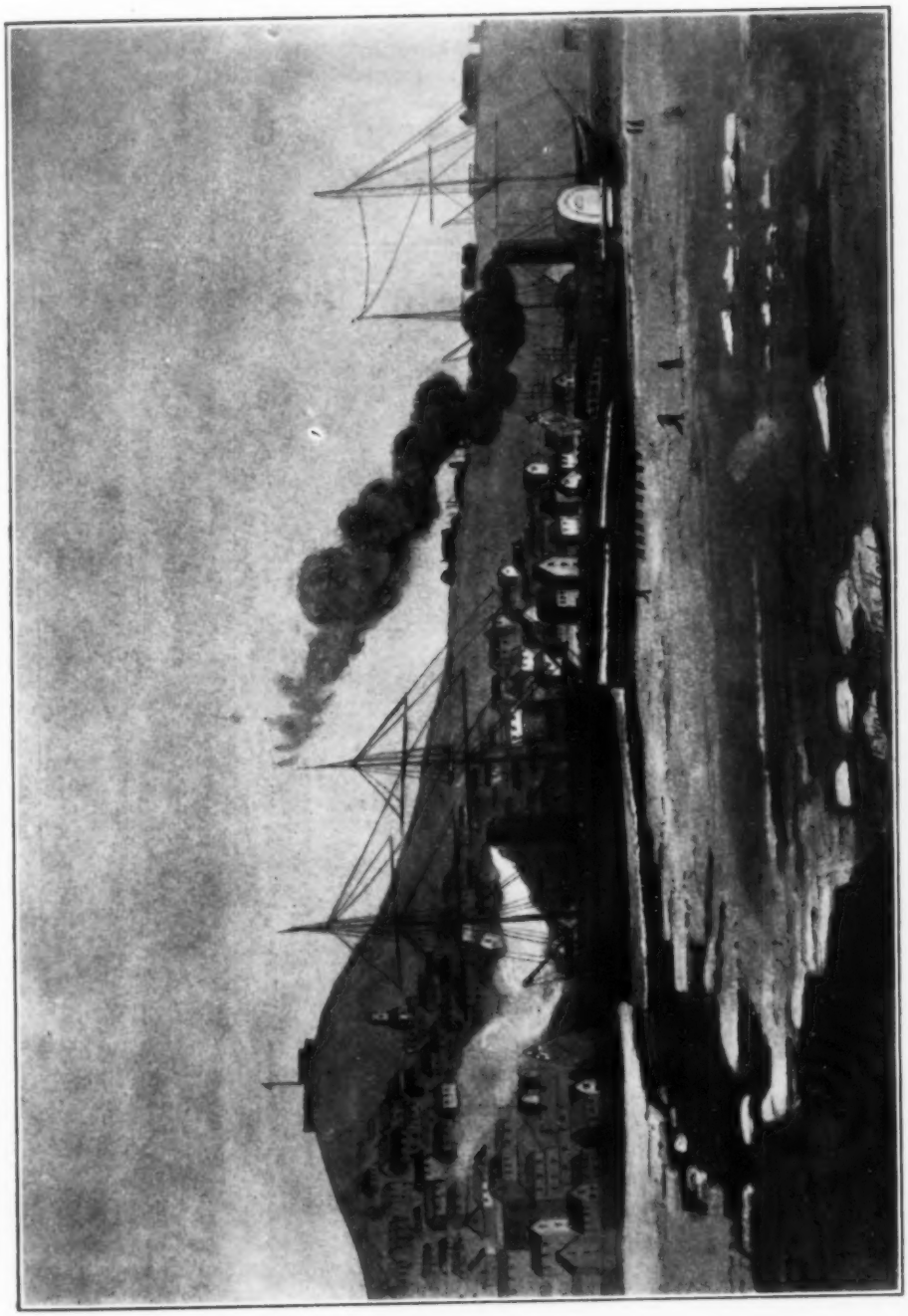


Canadian National Railways photograph.

Evening on the North West Arm. This bay, running back from the sea two and one-half miles into wooded hills, is one of the beauty spots of Halifax.



At Bedford Basin traces still remain of the round music room and the bowling green of "Prince's Lodge," that once famous retreat of royalty from the cares of government. From a water-colour by Cavalie Mercer, in the Public Archives of Canada.



The English and Newfoundland mail vessels making their way into Halifax harbour. From an original water-colour in the Public Archives of Canada by C. Williams.

which handled practically all the coal of the province. He was interested in the whale fishery and in the iron works at Clementsport. He had a finger in every commercial pie.

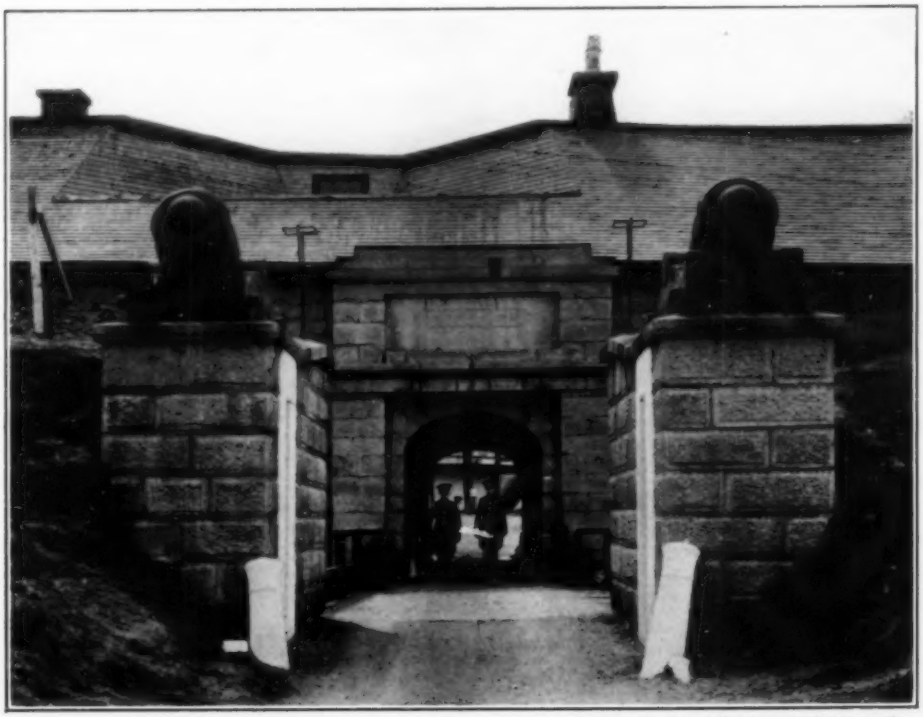
In general, the commerce of Nova Scotia followed that of New England, exchanging fish for rum, sugar and molasses. Samuel Cunard kept Lyle & Chappell's shipyard busy and is credited with controlling a merchant fleet of 25 sail. By 1830, he was worth £200,000, and was elevated to the Legislative Council. He had been interested in steam navigation, as is shown by his large subscription to the "Royal William," and, for years, he had conveyed the mails from Halifax to Boston and Bermuda in two small schooners, the "Lady Ogle" and the "Lady Strange." It was, therefore, quite in accordance with his previous activities that he should tender for the conveyance of mails across the Atlantic by the new-fangled steamship, winter and summer, and be awarded the contract by the British Government. Thus, the Halifax boy, who began with no capital but brains and character, became the pioneer of trans-Atlantic steam navigation and founder of the world-famous Cunard Line.

The career of Samuel Cunard is outstanding, but yet typical. Another native Nova Scotian who attained to great wealth by sheer ability was Enos Collins. As a young man he made a cruise in the "Charles Mary Wentworth" privateer, as first lieutenant. During the Peninsular War he freighted ships with provisions for Wellington's army, which he sold at a handsome profit. He was one of the founders of the Halifax Banking Company, which was a money-making concern. He died a multi-millionaire. The great chapter in the economic

(Continued on page 173)

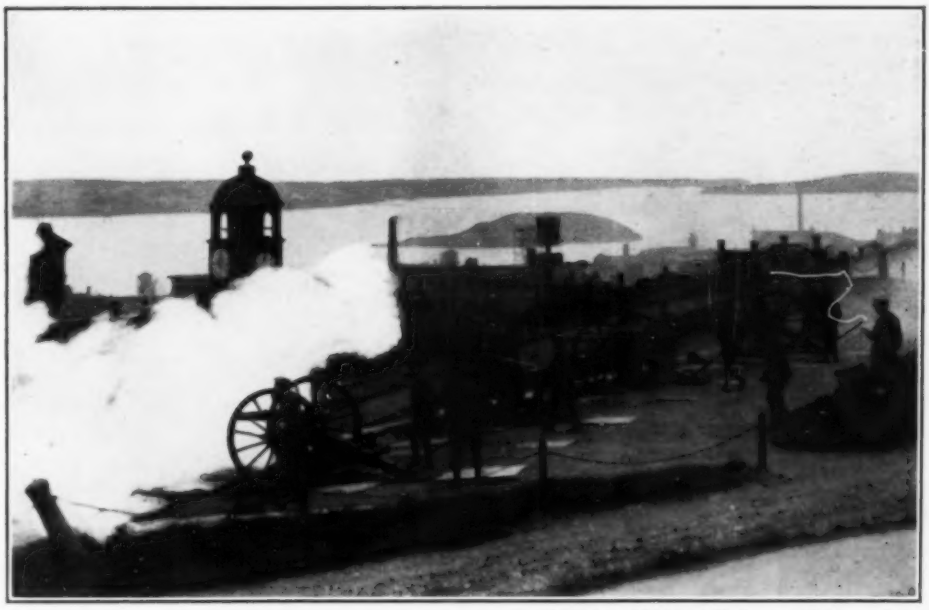
Canadian Gov't Motion Picture Bureau photograph.

Province House, Halifax, which took eight years to build, has for over 113 years housed the law-makers of Nova Scotia. A beautiful example of Adam architecture, within and without, the delight of experts, pronounced by Professor Percy Nobbs "a masterpiece."



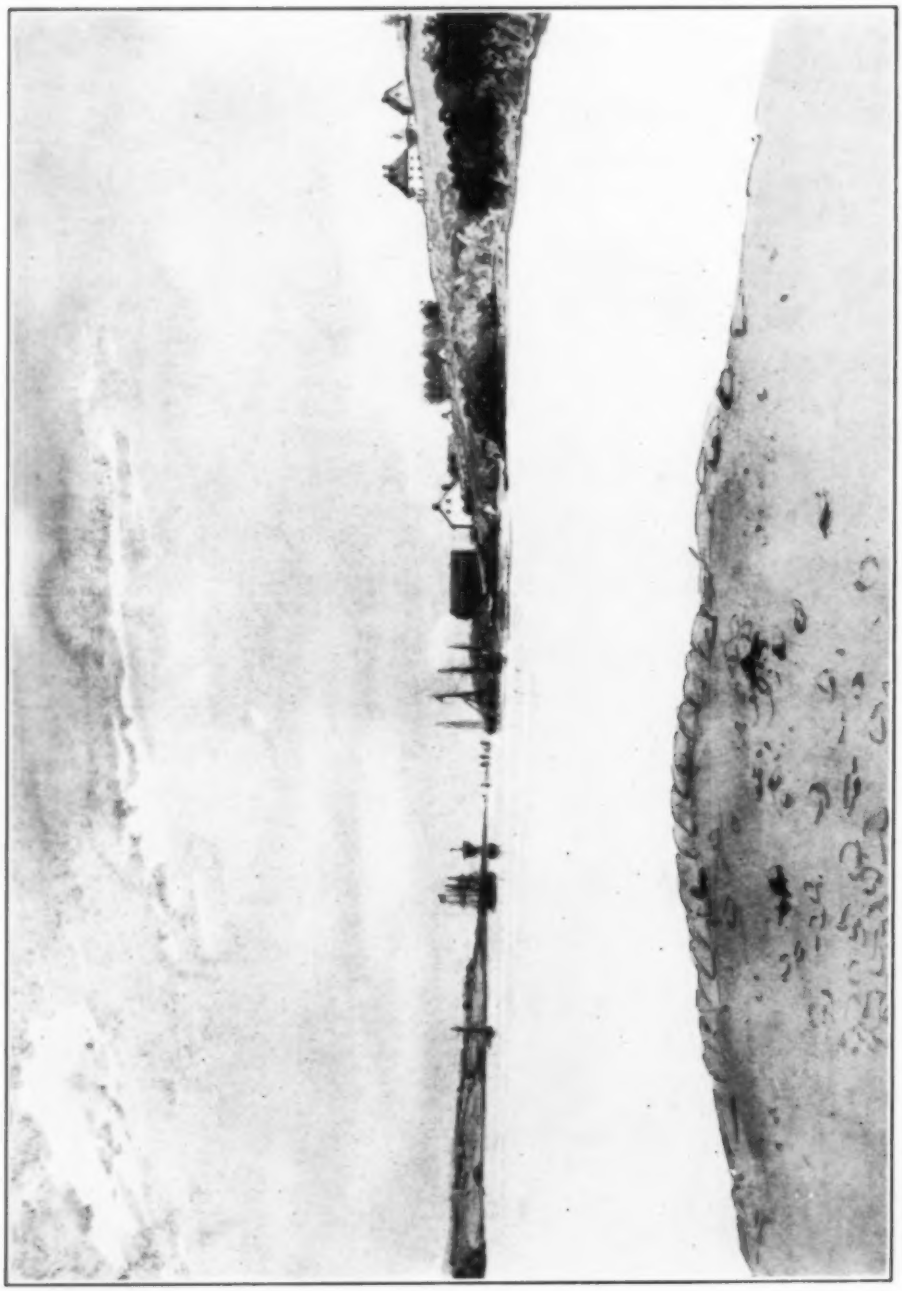
Canadian National Railways photograph.

Bee-hive like entrance to the Citadel, the costly star-shaped fort crowning the hill around which Halifax is built. The two mortars were brought from Louisbourg.

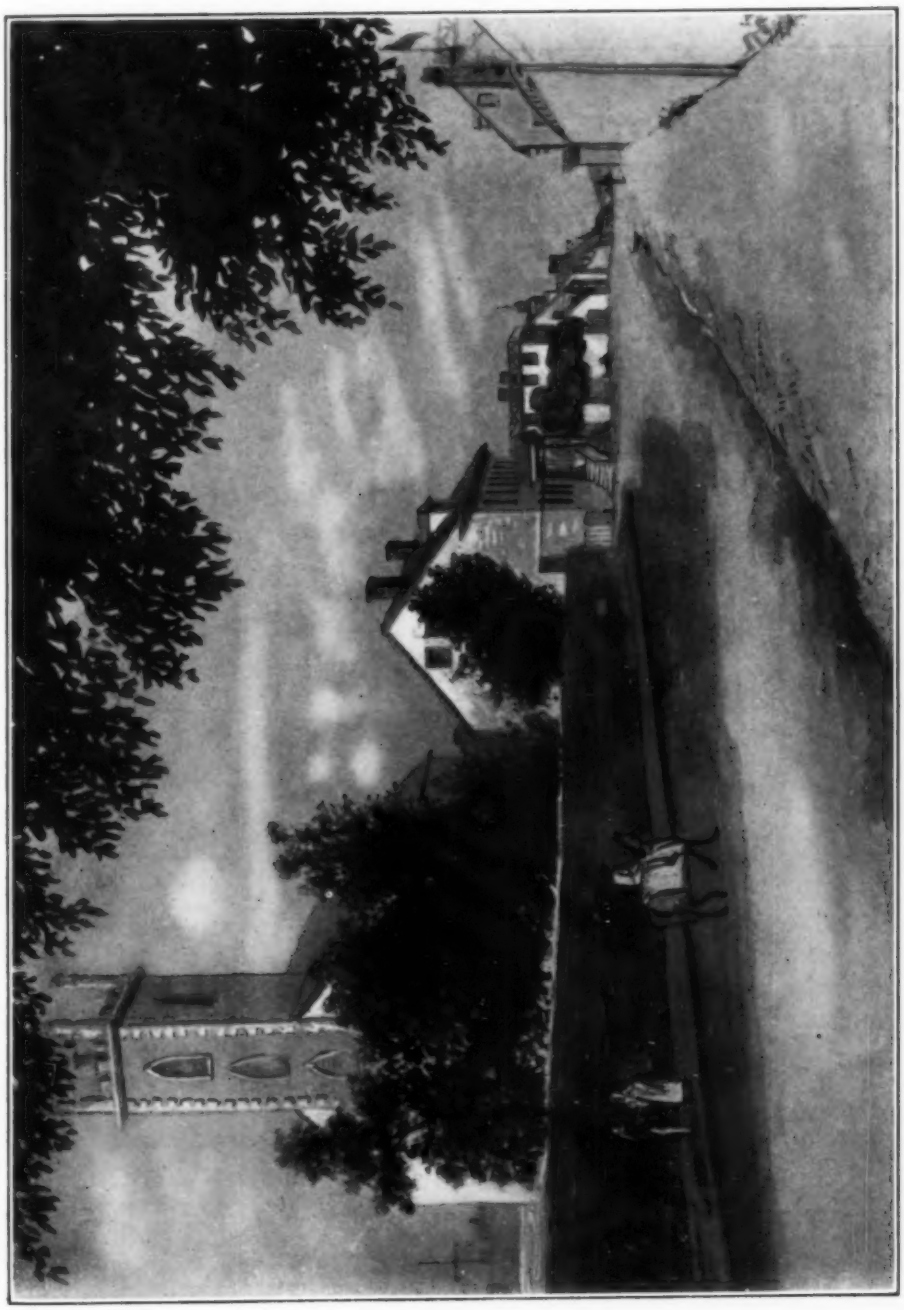


Canadian National Railways photograph.

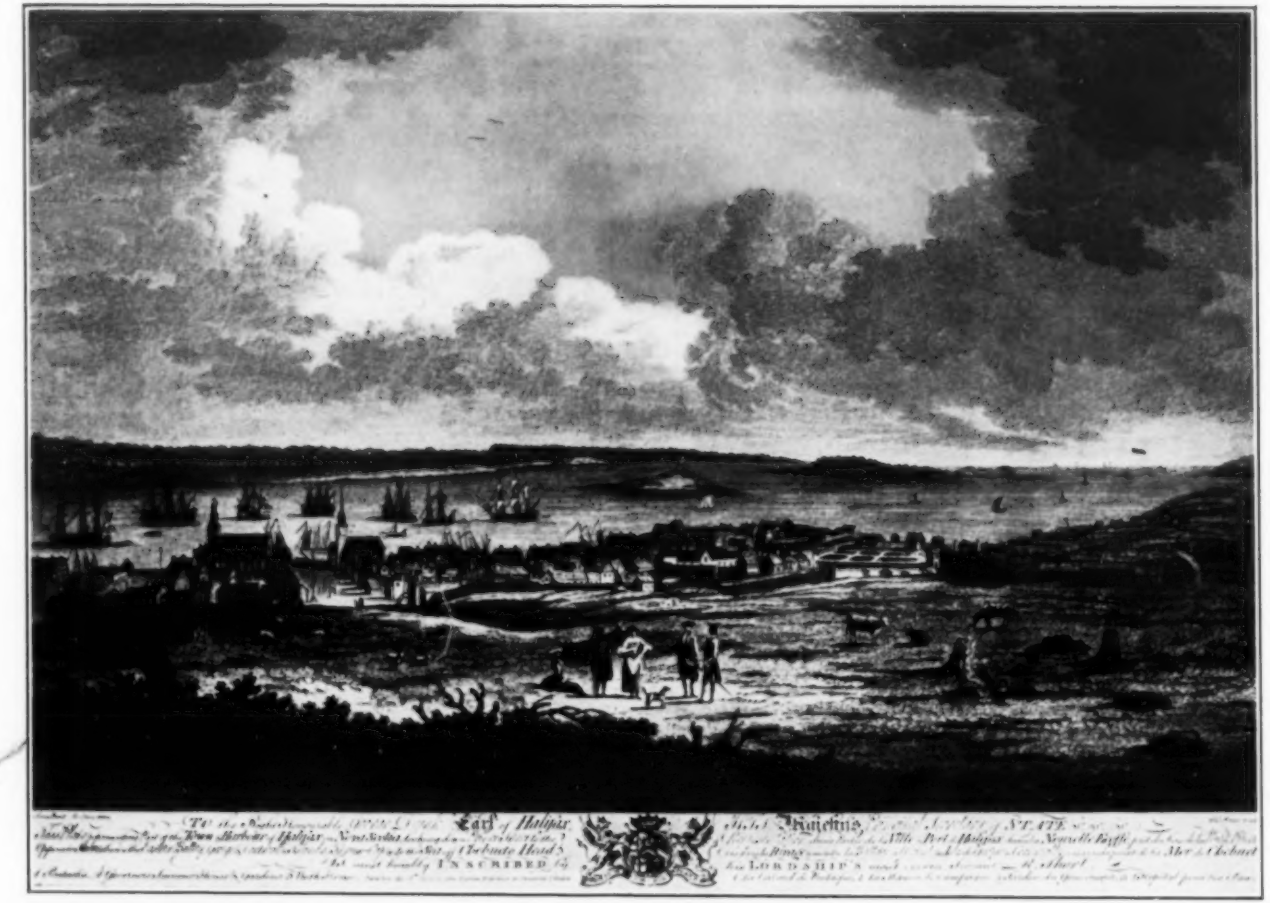
Halifax was a second Gibraltar, so strong that it was never attacked. There was never a shot fired in anger from these "virgin ramparts." The guns are used for saluting purposes only.



"Halifax Harbour from the Beach below the Grove. Looking towards the harbour's mouth." From a painting by Cavalie Mercer, in the Public Archives of Canada.



"Granville Street, Halifax, from gate of Government House. Roman Catholic church, priest's house, Judge Blainer's and in the background the end of Dalhousie College, Sept. 5th, 1840." From a painting by Cavalie Mercer, in the Public Archives of Canada.



To the Right Honourable George Dunk, Earl of Halifax, His Majesty's Principal Secretary of State, &c., &c., &c. This plate representing part of the town and harbour of Halifax in Nova Scotia, looking down Prince Street to the opposite shore shews the Eastern Battery, George and Cornwallis Islands, Thrum-Cap, &c., to the sea off Chebucto Head; is most humbly inscribed by his Lordship's most devoted servant, R. Short...1, Pontack's. 2, Governor's Summer House and Gardens. 3, Work House. Published Ap. 25th, 1777, by John Boydell, Engraver in Cheapside, London.

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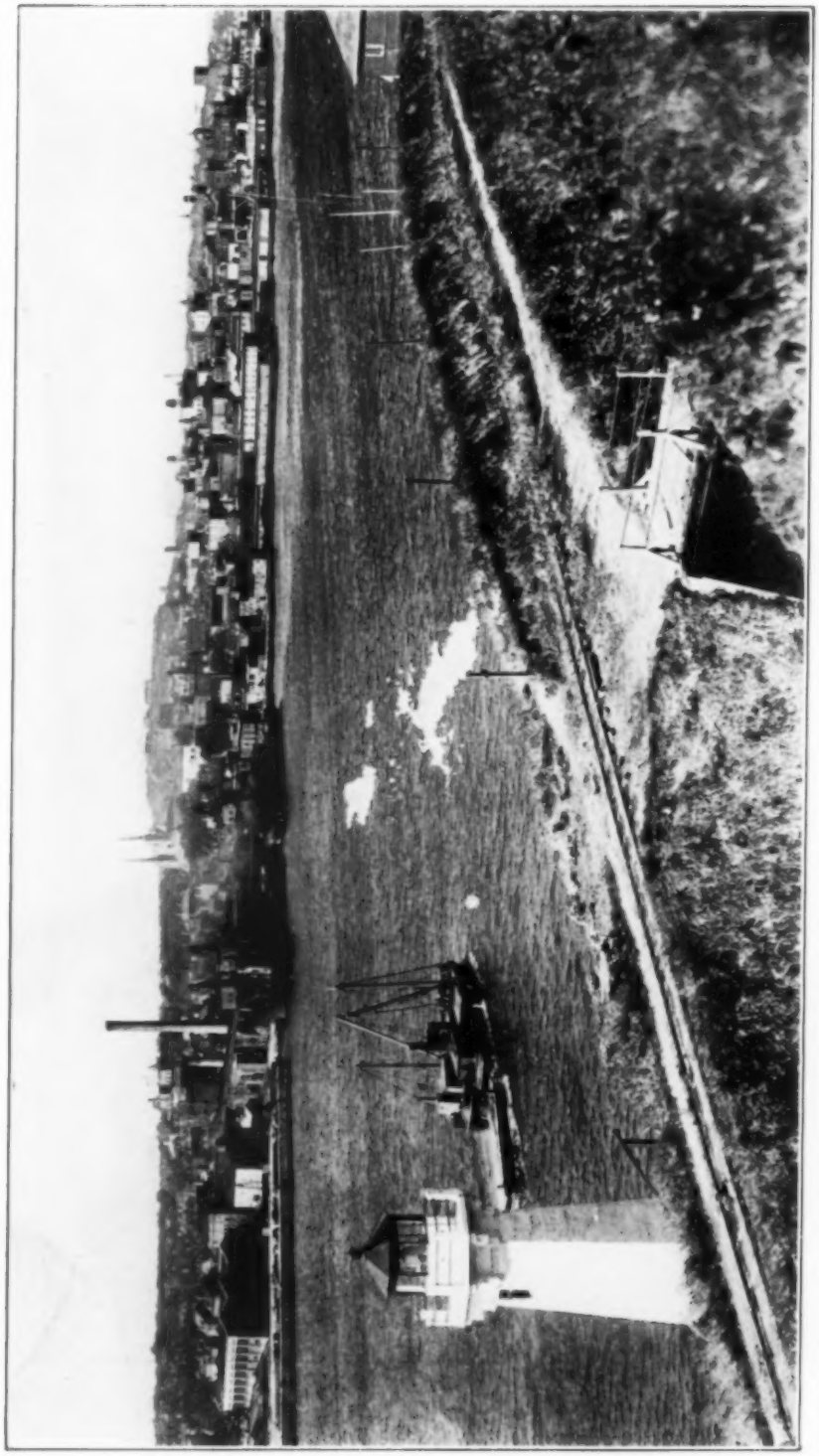
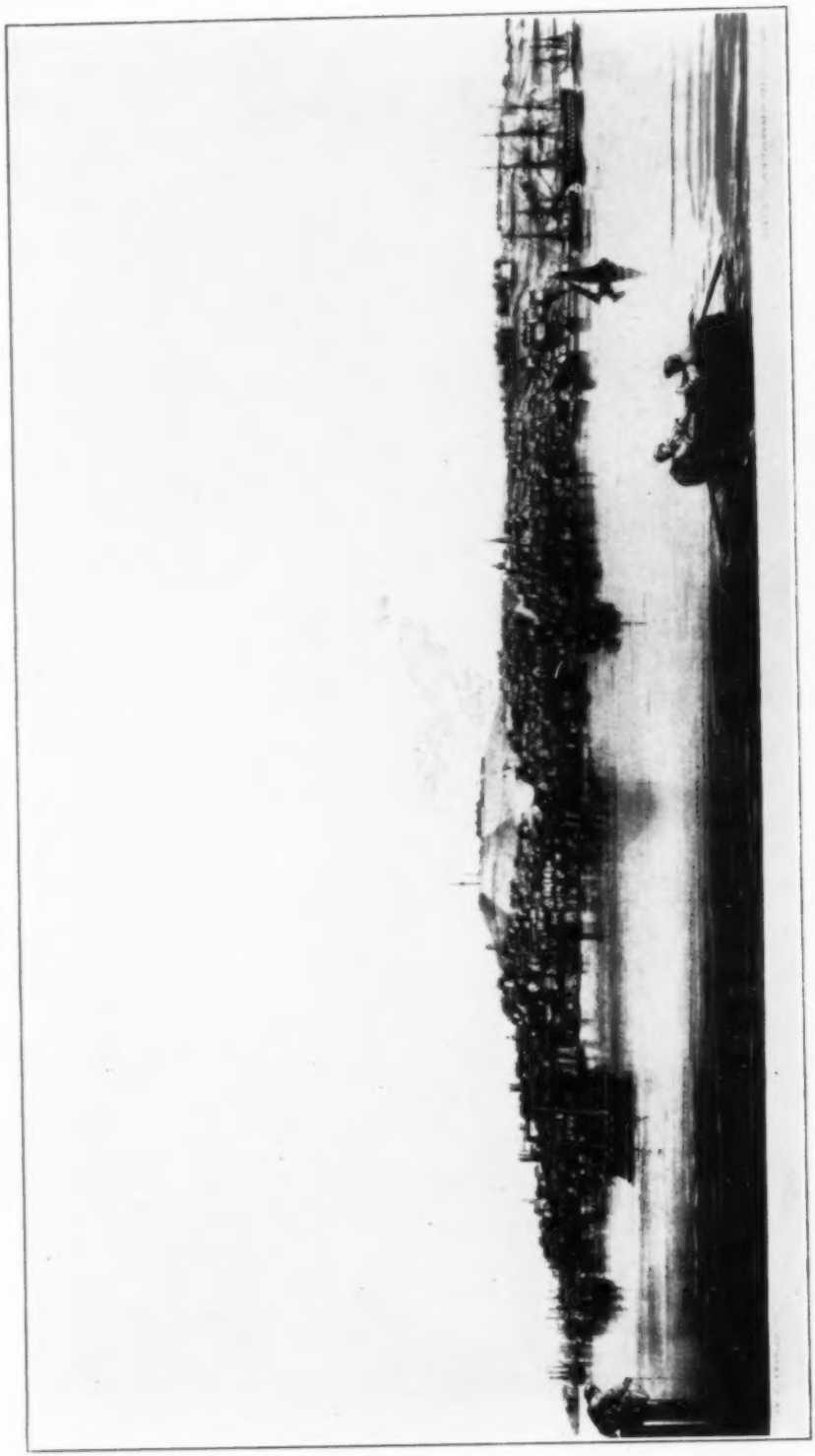
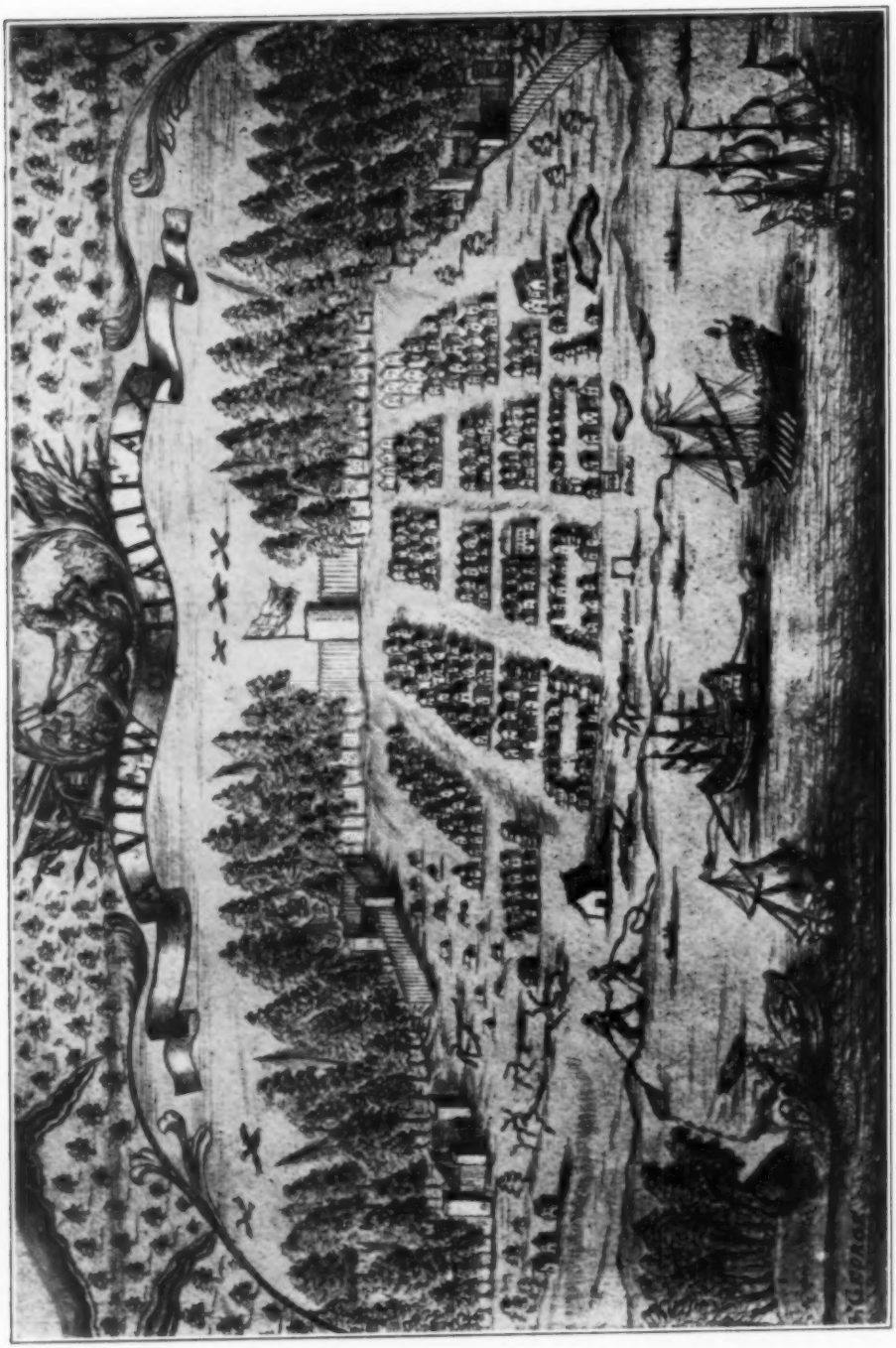


A view of modern Halifax from George's Island, with the Citadel in the centre background.



Halifax in the days when Bluenose ships carried the name of Nova Scotia to every port in the world. At the right the Dock Yard, with some of Britain's "wooden walls" at anchor before it.



An artist's conception of Halifax as it appeared in 1749. Note the gallows and stocks in the centre foreground. From Jeffery's map of 1750.

Canadian National Railways photograph.

Government House, official residence of the Lieutenant-Governors of Nova Scotia, at Halifax, since 1805.

(Continued from page 164)

history of Nova Scotia is the building and operating of wooden ships. At first, "soft wood" ships were built to carry timber to the United Kingdom; and vessel and cargo would be sold together. Then it was found profitable to own ships of better construction for general purposes as freight carriers. Every outport, Yarmouth, Windsor, Maitland, Hantsport, Pictou, built whole fleets of deep sea vessels. The Reciprocity Treaty, the Civil War in the United States, which drove American vessels

Canadian Gov't Motion Picture Bureau photograph.

The old execution ground behind the Citadel on the Common, is now a playground for young Haligonians.

from the sea, and the discovery of oil in Pennsylvania, created an insistent demand for tonnage. Freights were high. Often a ship would pay for herself in one voyage. Lucky ones returned 20 per cent on the investment. It has been said that wherever a Nova Scotia fortune is found, it had its origin in wooden shipping.

The share of Halifax in this great enterprise was peculiar. Not many ships were built on the shores of Chebucto Harbour, but Halifax firms supplied the ship-yards of the outports with cordage, anchors, compasses, windlasses and chains, metal work of all kinds, which could not be produced locally. They took as payment shares in the vessels so supplied, and the business was very profitable. Three members of one hardware firm in Halifax, upon retiring from business, withdrew nearly three million dollars capital.

The long business depression which followed Waterloo came to an end, and the fifth, sixth and seventh decades of the 19th century saw Halifax fairly prosperous. The province, as a whole, was growing in wealth and population. It was also becoming a self-contained community, with its own manufactories, insurance companies, banks and wholesalers. The age of railways had begun; but the commerce of Halifax was water-borne in wooden ships. Trade was with the West Indies, Britain and Mediterranean ports. The United States still imported Nova Scotia coal, fish and lumber. About 30 firms in Halifax owned vessels in this trade, each with its own "private signal," or house-flag. Great mansions, now divided, or turned into flats, institutions, or lodging-houses, bear witness to the wealth of the old-time Halifax merchants. At the same time, it must be remembered that the scale of values was very different from that prevailing at the present day. This was the period of moderate fortunes. A man with $300,000 or $400,000 was reckoned wealthy. Wages were low and materials cheap. His mansion could be built for $10,000. The cost of the carriage and pair in which he drove daily in state to his office would be covered by $500. A single tramp steamer would carry as much freight as his whole fleet of brigantines and schooners.

By Confederation, Nova Scotia became a part of North America. Before 1867, the orientation of the province had been sea-ward; now it turned to the land, westward, and the new relationship with the other provinces of British North America. Adjustment was not easy, and Halifax lost its pre-eminence as a business centre, over-shadowed by Montreal and Toronto. The old monopoly was gone. The new tariff for the whole Dominion of Canada put an end to the trade between Nova Scotia and the United States in fish and lumber. Times were hard for a decade, and brought discontent, a discontent which smoulders to the present day.

The concentration of the British Fleet in home waters after the Venezuela boundary trouble, and the withdrawal of the Imperial garrison, marked the end of the old order. No longer could it be said that Halifax lived on the Army and Navy. Once more it was necessary to make a new adjustment and determined efforts were made to develop local industries; in a word, to become modern. Then came the Great War, and once more the Halifax merchants reaped a rich harvest. The population increased, especially after the explosion of Decem- 1917, when it was necessary to rebuild a whole section of the city. Rents went up. Shipping and provisions firms made huge, unavoidable profits. The passage of troops, American, Australian, New Zealand, Japanese and Chinese, through the port, put much money in circulation. Once more the Army and Navy were a source of revenue to Halifax. In a single year of the War, one bank is said to have disbursed $120,000,000. At the close of the War, history repeated itself. Population ebbed, and values declined, and Halifax suffered in the world-wide depression. Still it was during this period that one local industry was reorganized and placed on a modern basis with a capital of $4,000,000.

Perhaps it is too much to hope that Halifax will ever be a great manufacturing centre; but the enormous outlay upon the terminal facilities of the port indicates that, with the natural expansion of business in Canada and the United States, the old garrison town will one day come into its own as one of the great shipping centres of the world.

Photograph by Jackson Hayward.

Indian Pipe (Monotropa uniflora), also known as Corpse-plant and Wood-Snowdrop. This singular inhabitant of Canadian woods is perfectly white from root to flower. Instead of green leaves it has broad and pointed scales, clasping the thick stem, which is terminated by one snowy-white flower. The Indian Pipe is so extremely sensitive that a few minutes after it has been picked it turns to an unsightly colour, becoming perfectly black when dried. "You must seek it in its forest haunts, under the shade of beech and maple, where the soil is black and rich, and there, amongst decaying vegetables, grows this flower of silvery whiteness."

Hughes Brothers photograph.

A view of the business district of Trail and the Tadanac metallurgical works, looking up the Columbia River. This picture, taken in early spring, shows the snow still capping the distant hills, the river at a low level, and the trees without foliage.

The Trail Metallurgical Plant

By PHILIP H. SHEFFIELD

THE quest for metal has played an important part in the history of civilization. Drawn by the lure of gold and silver, men do not hesitate to endure cold, hunger and fatigue, or to penetrate the wilder parts of the earth. As the years pass, the trails of the prospector become the nation's highways, and on the miner's camp-sites towns and cities grow.

The early history of British Columbia is largely a story of the journeys of fur-traders and prospectors. The fur-traders were first in time. They experienced the joys of discovery and reaped their furry harvests before the prospectors came, but it was the miners who brought the population. In fact, many of the towns in the interior of the province began as mining camps and owe their development almost wholly to the influence of mining. The city of Nelson was founded as a result of the discovery of the Silver King mine by the Hall brothers in 1887. The news of their good fortune soon spread and in the following year 250 prospectors were working in the mountains around Kootenay Lake. In 1889 Joseph Bourgeois, travelling up Trail Creek from the Columbia River, located the Lily May mine on Red Mountain. During the next year he and his partners discovered the War Eagle, the Centre Star and the Le Roi, the most famous of the Red Mountain mines. The mining camp which grew up around these claims became the city of Rossland.

PHILIP H. SHEFFIELD

was born in the United States in 1892, of English parents, was brought to Canada the following year and settled in Alberta, where he obtained his high school and normal school education. After teaching for two years he entered journalism, working in Montana and Washington. In 1913 he returned to teaching in British Columbia and in 1923 was appointed Inspector of Schools. For five years he has been official trustee of the community Doukhobor schools. Mr. Sheffield is a graduate of Queen's University and has done postgraduate work at the University of British Columbia and Columbia University. He is co-author of three elementary text books.

In the early nineties the whole area from the coast to the Rocky Mountains and from the main line of the Canadian Pacific Railway to the international boundary line swarmed with prospectors. They were "hard-rock" miners looking for lode mines rather than for placer diggings on the gravel bars. They combed the mountain sides, looking for outcrops and "float", and in many cases their search was richly rewarded. By the end of 1891, 140 claims had been staked in the region around Slocan Lake, and the little towns of Sandon, Kaslo, Nakusp, New Denver, Silverton, and Slocan City had sprung into existence. In the same year the discovery of the Mother Lode and the Granby, in what is known as the "Boundary" District, led to the establishment of Greenwood and Phoenix as copper-mining areas.

East Kootenay also shared in the general mining activity of that time. In 1892 three important properties were discovered. The first of these, the North Star, on Mark Creek, about 20 miles west of Fort Steele, was located by J. Bourgeois, who had staked the first of the Red Mountain claims three years before. The North Star was later acquired by Sir D. D. Mann and operated for 12 years. The second discovery, the St. Eugene mine near Moyie Lake, had by 1900 become the largest shipper of lead in British Columbia. The third, the Sullivan mine, across the valley and about two miles distant from the North Star, is now the largest single producer of lead and zinc in the world. To this last discovery the town of Kimberley owes its origin.

The rich gold-copper ores of the Red Mountain mines at Rossland, the "Golden City", attracted widespread attention. The owners of the Le Roi contracted with Mr. Heintze, a smelter owner of Butte, Montana, to treat a quantity of their ore. Mr. Heintze

Hughes Brothers photograph.

From the top of one of the big "stacks" one gets an interesting view of the terraced levels of the river valley, and the tree-lined streets of Trail.

organized the British Columbia Smelting and Refining Company to construct and operate the proposed plant. A smelter site was selected on a bench overlooking the Columbia River near the mouth of Trail Creek, and there in 1895 a small plant was constructed. This company also built a narrow-gauge railway seven miles long, from the smelter to Rossland, and within a few years this road became one of the company's most valuable assets.

When the Canadian Pacific Railway made overtures to purchase the little narrow-gauge railway, the Heintze interests saw a chance to dispose of their other holdings at Trail. They refused to sell the railway unless they sold the smelter too. Accordingly, the Canadian Pacific Railway became the owner of both railway and smelter, and, for a time, the latter was operated under the name of The Canadian Smelting Works, as a department of the railway company.

In 1906 the Consolidated Mining and Smelting Company of Canada was formed and it acquired the little smelter together with certain mining properties. This organization was really a merger of the War Eagle and Centre Star of Rossland, the St. Eugene at Moyie, the Richmond-Eureka at Sandon, and the Canadian Smelting Works at Trail.

The Rossland mines are now worked out, the Richmond-Eureka has ceased operations and the St. Eugene has shipped its last ton of ore. Meanwhile, however, other mining developments have been so successful that the little reduction unit on the bench has become the largest non-ferrous metallurgical plant in the world, a plant employing 3,000 men in its smelters and refineries, and an additional 2,000 men in its mining and other activities.

The various units of the reduction plant, together with the dwelling houses of many of the officials and employees of the company, comprise the municipality of Tadanac (T plus "Canada" reversed). Tadanac is also the name of the railway station and the trade-mark under which all the company's products are marketed. Adjacent to Tadanac is the town of Trail, the "Smelter City", with a population of 8,000 people. The city of

Hughes Brothers photograph.

This picture shows the tunnel workings of the world-famed Sullivan mine near Kimberley, the ore from which was a puzzle to the metallurgists for many years.

Rossland, once the centre of mining activity in the Kootenays, has become a residential town, where many of the men employed at Tadanac have their homes.

The original copper smelter, and the lead smelter which was added in 1899, have been superseded by more modern and extensive reduction plants, which now cover an area of 250 acres, and include a lead smelter, a copper smelter, an electrolytic lead refinery with a daily capacity of 450 tons, an electrolytic zinc plant with a daily capacity of 400 tons, an electrolytic copper plant with a capacity of 70 tons of copper per day, gold and silver refineries, a hydrofluoric and hydrofluosilicic acid plant, a sulphuric acid plant producing 150 tons of acid a day, a bluestone plant, a cadmium plant producing 40 tons of cadmium per month, together with crushers, ball mills, smoke treaters, research laboratories and all the paraphernalia of a huge reduction works. In the company's modern machine shop and foundry are produced most of the mechanical appliances used in the concentration and reduction of the various metals. These shops are equipped to make castings of steel, white or grey iron, and all kinds of bronze and brass.

The several units of the plant have an annual output valued at over $30,000,000. Here all the gold, silver-lead-zinc and copper ores of the district, together with a considerable tonnage from outside points, are smelted and refined.

It is not easy for the casual visitor at the Tadanac plant to get a true picture of the magnitude of its operations. The trains of ore cars arriving, the throngs of men coming on or going off shift, the roar of machinery, the enormous stacks —all these are impressive, but it is in terms of the finished products that one really sees the plant. When all the units are working to capacity, the daily output would include 10 or more freight cars loaded with zinc, 12 cars of lead, and two cars of copper,—a trainload of refined metal every day! To this may be added a car of cadmium every month, and half a dozen tank cars of sulphuric acid every day. Nor does this include the silver and gold, aristocrats of the

Progress Studio photograph.

Their Royal Highnesses, the Prince of Wales and the Duke of York, under the guidance of the General Manager and other officials of the company, seeing the Tadanac plant from the linen-covered deck of an inter-plant trolley.

world of metals, but in the present case merely by-products, which travel by express and under guard.

The remarkable expansion at Tadanac is largely due to the development of the Sullivan mine at Kimberley, near Cranbrook. In 1892, when the Kootenay mining excitement was at its height, Pat Sullivan, Mike Holland and John Cleaver came from Idaho to prospect in the mountains around Kootenay Lake. Later Holland left the party, but Sullivan and Cleaver worked their way over the mountains and down the St. Mary's River to Fort Steele. There they enlisted the aid of E. C. Smith, who knew the area well, and turned back up the river towards Mark Creek, where the

Hughes Brothers photograph.

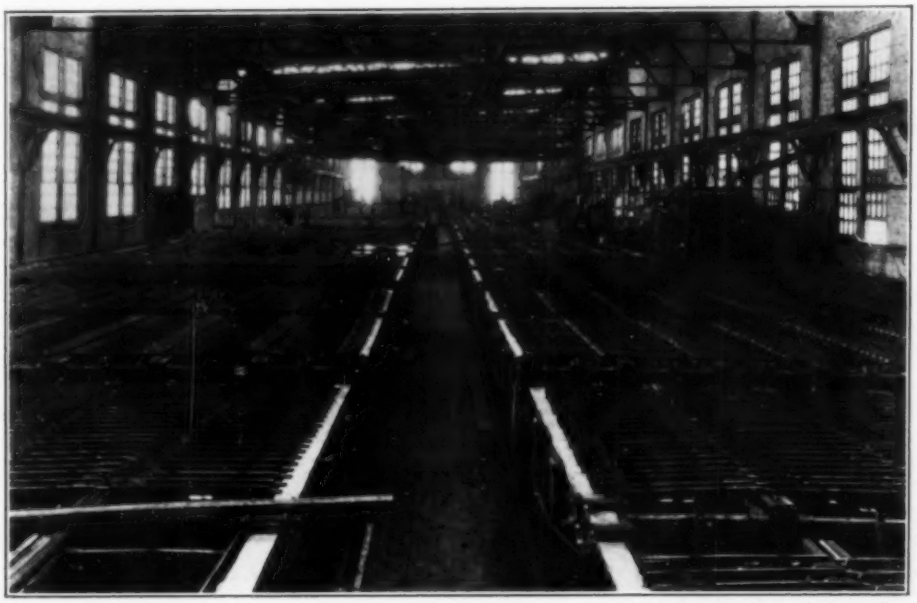
Another spring view of Trail and the smelter area. The valley at the upper left of the picture leads up to Rossland, once an active gold-mining town.

Hughes Brothers photograph.

The concentrator at Kimberley can handle 6,000 tons of ore per day.

North Star had recently been located. All the good ground on one side of the creek had been staked, but across the creek and on the slope facing the North Star, Sullivan on the second day of his search found an outcrop. Four claims were staked, one for each of them and one for James Cronin, who had aided them with funds. Cronin, who in the meantime had discovered and staked the St. Eugene at Moyie, later abandoned his claim in the Sullivan group.

In 1896 Col. Redpath, Judge Turner and associates, having taken a lease and bond on the Sullivan group of claims, formed the Sullivan Group Mining Company, and proceeded to prove and develop the property. The Canadian Pacific Railway's branch from Kimberley to Cranbrook was completed in 1899. This made possible the shipment of ore from the mine to existing smelters, and for three years regular shipments were made to the Hall Mines smelter at



Hughes Brothers photograph.

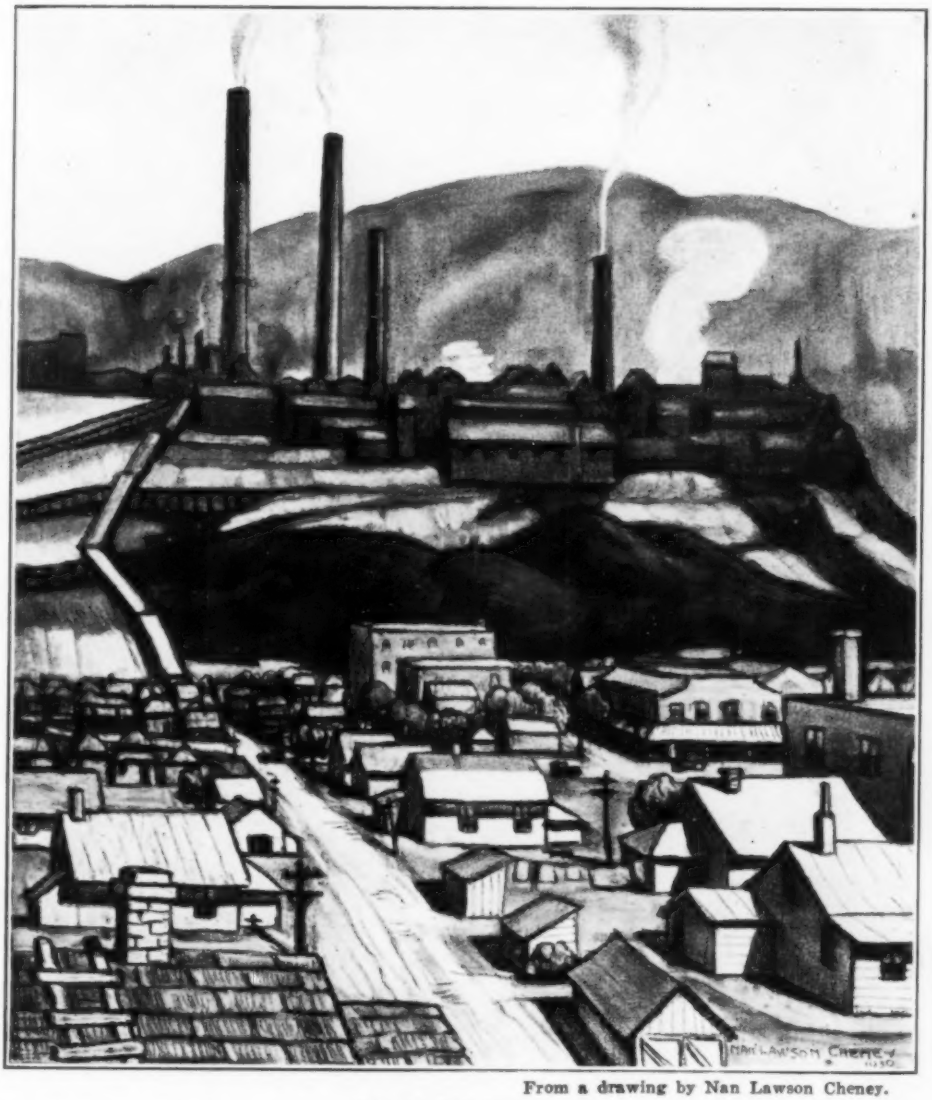
In the refining of copper, too, electrolysis plays its part. Note the travelling crane in the distance.

From a drawing by Nan Lawson Cheney.

Slag, sand and steps.

Nelson and to the Canadian Smelting Works at Trail. By 1903 the Sullivan Group Mining Company, having developed 300,000 tons of ore, erected their own smelter at Marysville near Kimberley, but so many metallurgical difficulties were encountered that both mine and smelter were closed in 1907. Two years later the mine was bonded by the Consolidated Mining and Smelting Company. After intensive investigation and further development of the property, that company decided to exercise their option to purchase the mine, and in 1910 it passed into their possession.

In the years that have followed, the Sullivan has proved to be a veritable wonder mine. It is the largest producer of silver in Canada and the largest single producer of lead and zinc in the world. The mining engineer glibly states that Sullivan ore is a mixture of galena, marmatite (zinc blende with iron), pyrite and pyrrhotite. The layman, however, is more informed when he learns that from this ore are produced lead, zinc,



From a drawing by Nan Lawson Cheney.

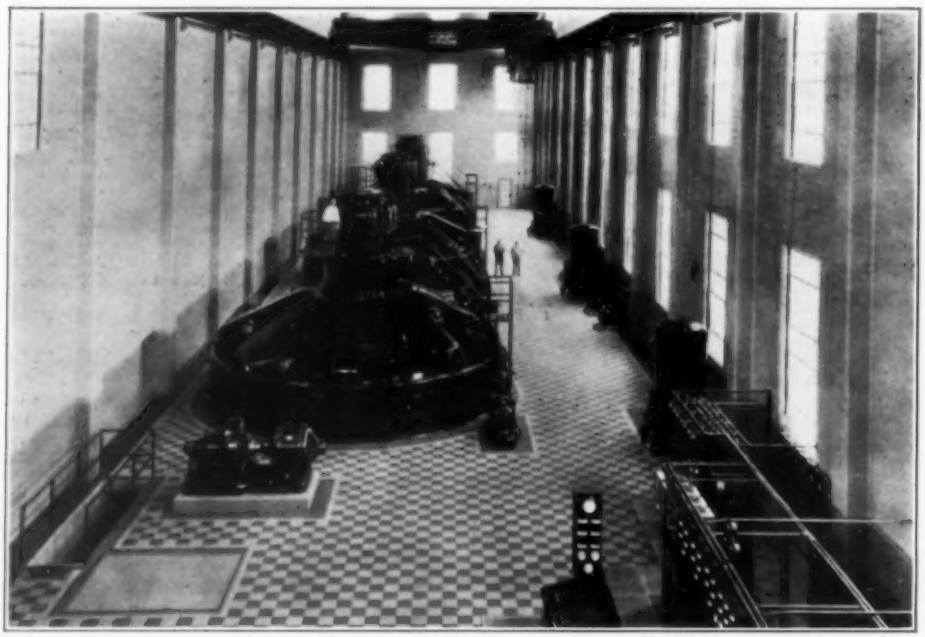
The Trail plant.

silver, gold, copper, antimony, cadmium and bismuth. The ore contains iron and small quantities of tin which are not at present recovered.

Most silver-lead ores carry more or less zinc. Originally the Sullivan ores were smelted for silver and lead only. As the presence of zinc was detrimental to high recoveries in blast furnaces, ores containing zinc were heavily penalized. The high proportion of zinc in Sullivan ore was, therefore, a liability rather than an asset. The following extracts, taken from the report of a commission of experts appointed by the Government of British Columbia in 1906, show the hopelessness of the situation at that time: "The mine (Sullivan) is essentially a lead mine although it has more developed zinc than any other mine in British Columbia, but the character of the ore is such that extraction is almost hopeless. Zinc smelting cannot be carried on with coal at present prices. Electric smelting will never displace ordinary fire smelting, if it is necessary to

Hughes Brothers photograph.

Rotary converters at Tadanac convert the alternating current to direct current for use in the electrolytic divisions.



Hughes Brothers photograph.

The generator room at number 3 plant on the Kootenay River. This plant generates 75,000 horsepower.

Hughes Brothers photograph.

The transformer station at number 3 plant.

Hughes Brothers photograph.

A section of the electrolytic zinc refinery. Each cell contains 24 lead anodes and 23 aluminum cathodes. The zinc from the solution is plated on and stripped from the cathodes. At the right piles of zinc sheets are ready for the casting room.

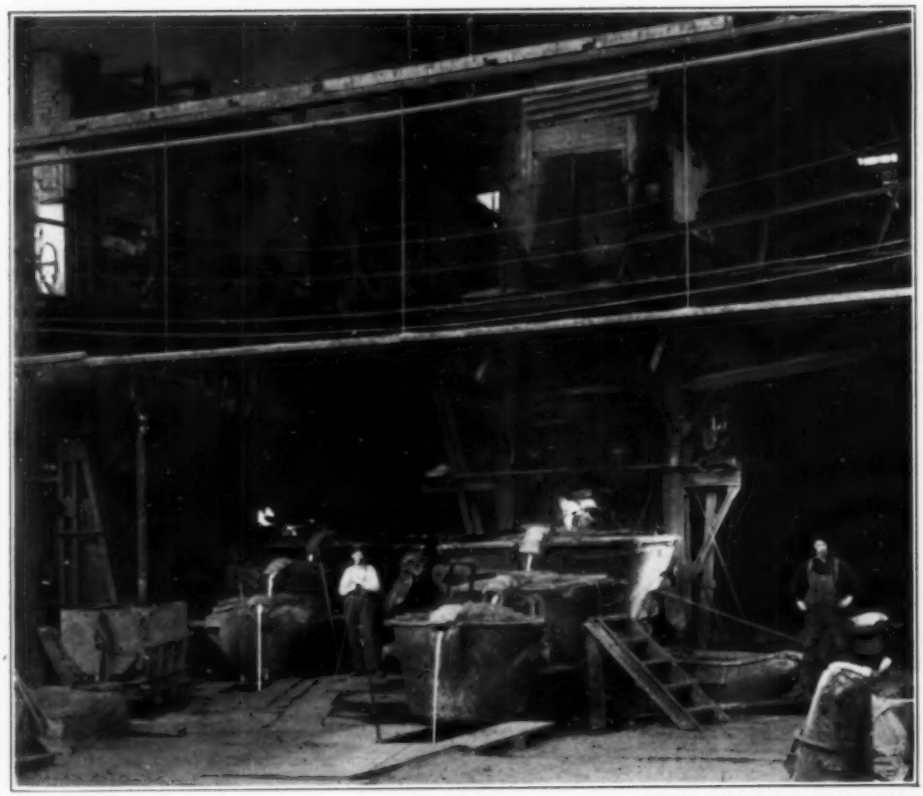
Hughes Brothers photograph.

An electric furnace used for casting alloy steels, special steels, etc., for use in construction work about the plant.

generate power from coal. It is unlikely that electric smelting of zinc ores can ever profitably be carried on in the zinc-producing areas of the East and West Kootenays."

Nevertheless, in the face of these discouraging reports, as soon as the company had acquired the mine, its research department attacked the problem of recovering the zinc in the Sullivan ores. Samples of the ore were sent for study and treatment to smelters in foreign lands, but no success was achieved. Process after process was tried, experiment followed experiment, and one test mill after another was built and discarded. By 1912 some features of the problem had been solved. It was discovered, for example, that zinc could be plated on aluminum sheets by electrolysis, but at the low price then prevailing the metal could not be produced at a profit. When the Great War began, Britain and her allies needed metals urgently, and at the suggestion of the Munitions Board the company undertook to produce zinc on a large scale. An electrolytic zinc refinery was built in 1915 and began to operate early in the following year. By selective mining and careful sorting, ore high in zinc content was secured and the company was able to make regular shipments of the metal, although the recovery of both lead and zinc was still comparatively low.

The real solution of the problem of how to separate the zinc and lead in the Sullivan ore was found to lie in selective oil-flotation methods, which were developed in the Tadanac laboratories in 1920. The first flotation plant started operation in March and, after a short period of discouraging results, began to function more effectively than gravity concentration, magnetic concentration or any of the other methods previously employed. The 600-ton magnetic plant was then remodelled to permit the extension of flotation operations. For a few months only a mixed lead and



Hughes Brothers photograph.

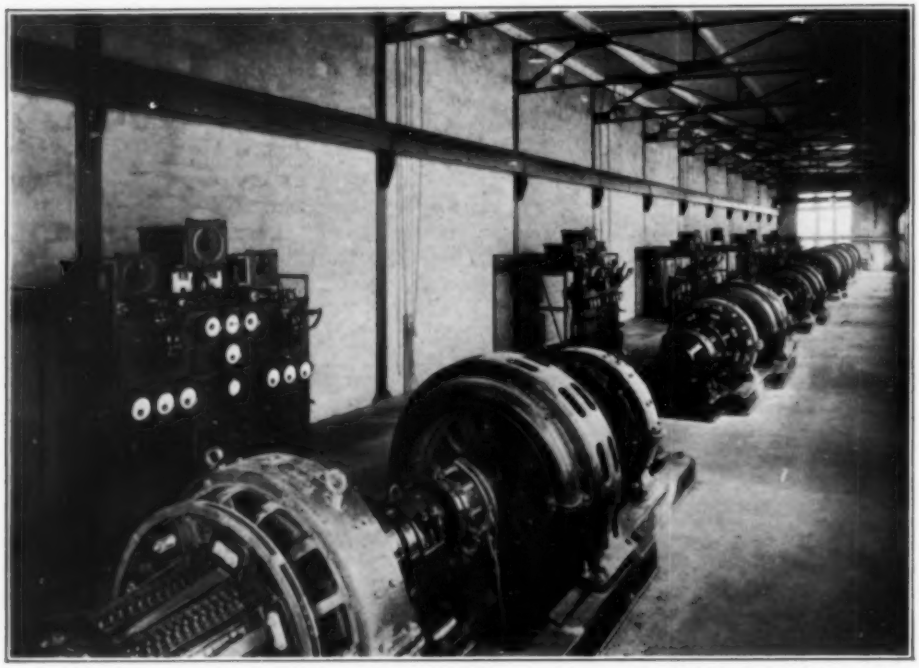
The lower floor of a copper furnace, showing the molten slag and matte being discharged from the furnace.

zinc concentrate was produced, but during that time the company's chemists made great progress in determining what chemical reagents should be mixed with the ore for the most effective flotation results. In the autumn of 1920, the first lead concentrate to be produced from Sullivan ore by differential flotation was turned out. That culmination of years of research work well deserves to go down in the annals of the company and in the history of Canadian metallurgy as a red-letter event.

From that time on the test mill saw many changes, one difficulty after another being conquered, until in August, 1923, the present process was perfected. As a result, the production of lead, silver and zinc increased enormously, and the Sullivan mine, which was so long the despair of metallurgists, came into its own.

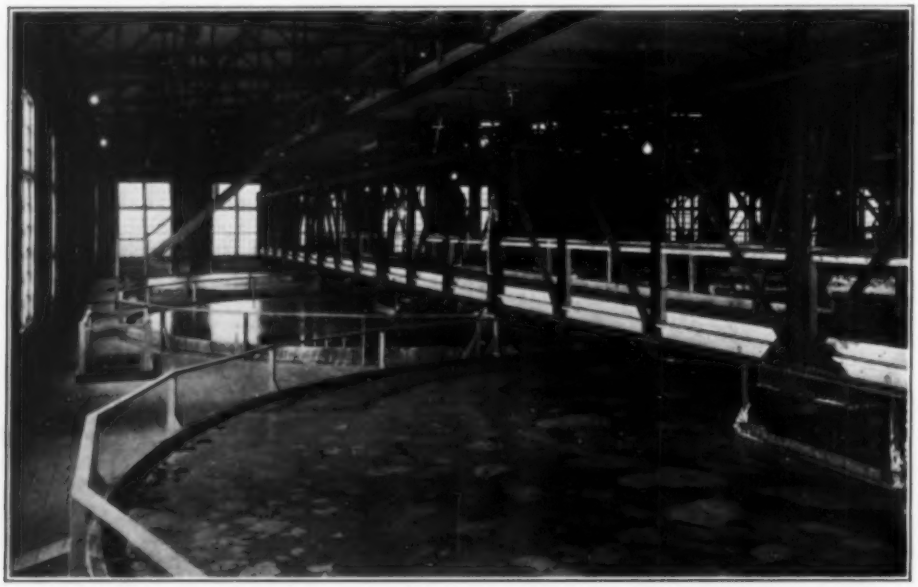
Ore concentration by oil flotation is one of the most marvellous developments in the whole field of modern metallurgy. In the ordinary flotation process, the valuable sulphides are separated from the worthless gangue by causing them to float on the surface of a pulp consisting of finely pulverized ore, water and oil. The mixture is agitated so that the sulphide particles are coated with oil, and air bubbles become attached to them, with the result that the heavy particles float in a froth on the surface, while the light particles of waste rock settle to the bottom. As has been aptly said, this is "concentration upside down!"

More marvellous still are the methods of differential or selective flotation which floats the mineral constituents one at a time. After thousands of experiments the research staff of the Consolidated discovered that the addition of certain chemicals in small quantity to the pulp, under carefully controlled conditions, made possible the flotation of a high-grade lead concentrate practically free from zinc, then of



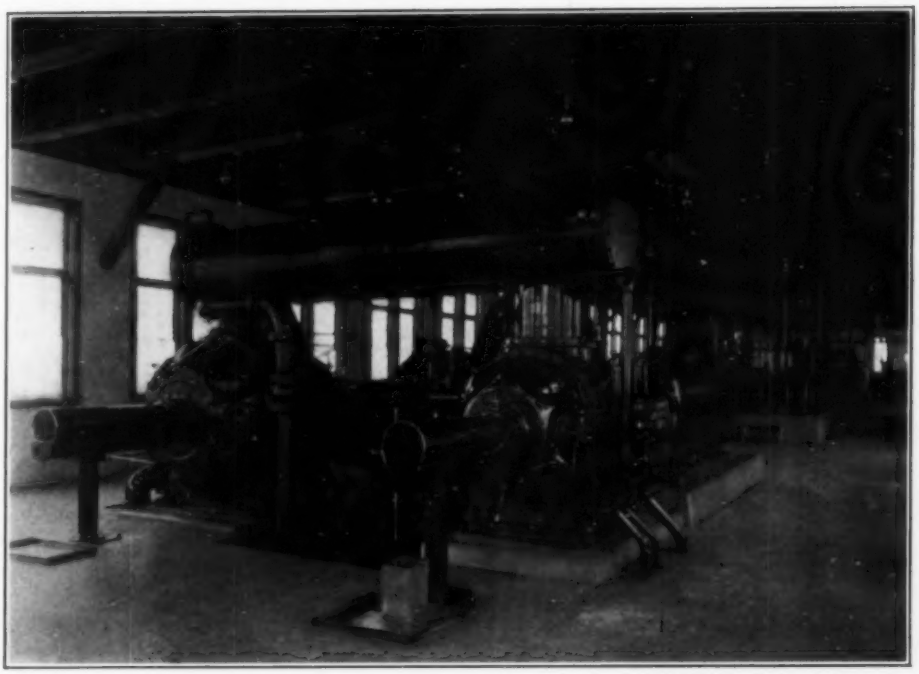
Hughes Brothers photograph.

Number 2 generator room at Tadanac. Part of the power for the zinc refinery is supplied by motor-generator sets, each set consisting of a motor with a generator on either side of it. Each generator supplies power for a unit of 36 electrolytic cells.



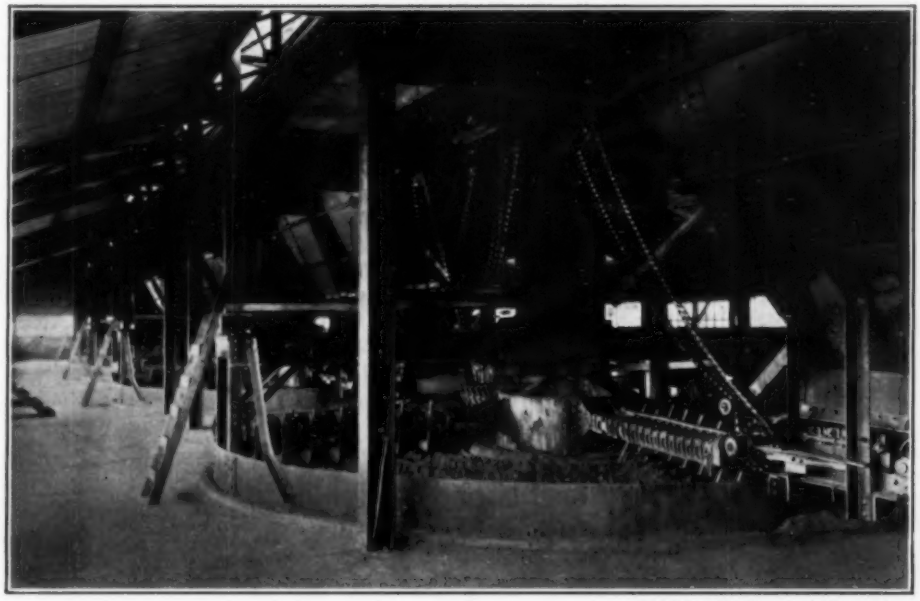
Hughes Brothers photograph.

In these wooden tanks the sediment from the zinc solution settles to the bottom and is reclaimed. The clarified solution is purified and then passes to the electrolytic tanks.



Hughes Brothers photograph.

The compressors, driven by electricity, compress air for operating the drilling machines within the mines.



Hughes Brothers photograph.

Roasters at Tadanac. Here the zinc concentrates are roasted for eight hours at a temperature of from 1,250 to 1,430 degrees Fahrenheit, the purpose being to oxidize the zinc sulphide so as to make it soluble in dilute sulphuric acid.

Hughes Brothers photograph.

A casting-wheel for making copper bars. The pure copper cathodes from the refinery are melted and cast into bars for shipment.

a high-grade zinc concentrate, while the iron sulphides were made to settle with the non-metallic constituents.

The contribution made by the company's technical staff in the development of preferential flotation, roasting technique, improvement in lead blast-furnace practice and the electrolytic refining of zinc, has been so great as to call forth the following commendation from an eminent Australian engineer at the Empire Mining and Metallurgical Congress, held in Canada in 1927: "As one associated in the lead and zinc industry on the other side of the world, I would say that we congratulate Canada, not only in mining, but particularly in connection with metallurgical development. To this the Sullivan mine owes its existence to-day, because we all know that the ore is most complex, and those men who have done so much in bringing about such wonderful results by preferential flotation are certainly deserving of the highest praise."

In appreciation of this contribution to metallurgical knowledge, the American Institute of Mining and Metallurgical Engineers unanimously decided to bestow upon Mr. S. G. Blaylock, the vice-president and general manager of the Consolidated Mining and Smelting Company of Canada, the Douglas Medal for 1928. The awarding of this medal to Mr. Blaylock was not merely an acknowledgment of the important research work carried out in the Tadanac plant, but also a recognition of his own dominating part in that amazing development. Mr. Blaylock is the sixth man and the first Canadian to receive this award, which is itself named in honour of the great Canadian scientist, James Douglas.

The new Sullivan concentrator at Kimberley, which was constructed to

Hughes Brothers photograph.

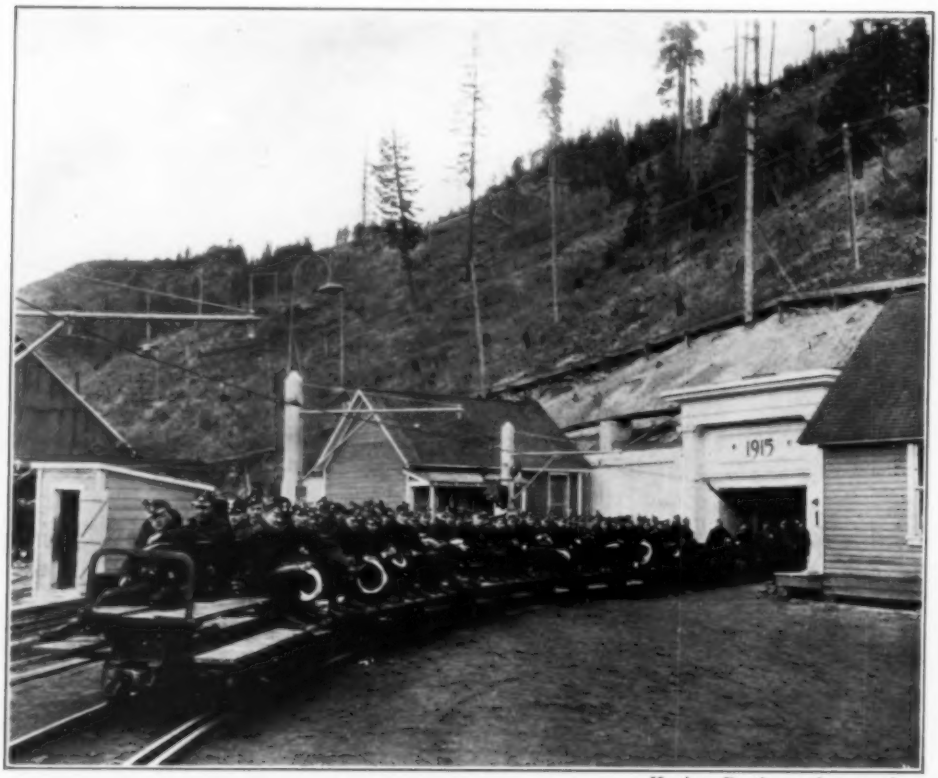
The classifiers at the Kimberley concentrator. The products from the grinding mills are classified by these machines into fine and coarse material.

carry out the selective oil-flotation process that had been developed in the Tadanac laboratories, began operations in 1923 with a daily capacity of 3,000 tons, which has since been increased to 6,000 tons. In 1929 an average daily tonnage of 4,821 tons was maintained.

The term 'smelter' usually conjures up visions of giant furnaces, roaring fires, and streams of molten metal. These things are seen at Tadanac, particularly in connection with the smelting of lead and copper and in the moulding or casting of metals into bars, but they are relatively inconspicuous. Fire, so long looked upon as the element of purification, is being displaced by electrolysis in large metallurgical plants. That dramatic figure, the furnace man, with goggles and heat-resisting gloves, is being supplanted by the chemist and the electrical engineer. The visitor at Tadanac is chiefly impressed by the acres of electrolytic vats, the acrid smell of the "cell" acid, the business-like efficiency of the mechanical labour-saving devices, and the manipulatory perfection of the men at the casting wheels, where the bars are moulded, cooled, stamped, inspected, weighed and loaded into the cars for shipment, all within a few minutes. The plant at Tadanac was once merely a smelter, but now it is a great group of metallurgical units.

The zinc concentrate from Kimberley, containing 49 to 50 per cent zinc, is first roasted to oxidize the zinc sulphide, thereby rendering it soluble in dilute sulphuric acid.

The hot material is then conveyed to the leaching plant. The Tadanac method of leaching, which consists of two distinct leaching circuits, the "acid" and the "neutral", has proved to be an important factor in increasing the efficiency and decreasing the cost of this portion of the process. In the acid circuit the zinc is dissolved, leaving a residue containing all the lead, gold and silver. In the neutral circuit the iron, arsenic, antimony and bismuth impuri-



Hughes Brothers photograph.

A mine crew going on shift at the Sullivan. These men will ride nearly two miles underground before the end of the tunnel is reached.

Hughes Brothers photograph.

The charge floor of the lead blast furnaces at Tadanac. The flue above the furnaces carries the gases to the smoke treaters near the big stacks.

ties are precipitated from the solution. The residues from the acid circuit are smelted for lead, gold and silver. The solution containing the zinc passes through mechanical agitators where copper and cadmium are precipitated. The cadmium taken from the solution as an impurity has become a source of revenue.

crushed and mixed with coke to form the charge for the furnaces. As the lead melts in the furnace, the molten bullion is run off into 40-ton skimming pots in which it is conveyed by travelling cranes to drossing furnaces. After the dross is separated, the bullion is cast into anodes, weighing about 360 pounds

Hughes Brothers photograph.

The electrolytic cells are made of cement and lined with a mixture of sand and sulphur about an inch thick, to prolong the life of the cells and to protect them from the acid.

After filtration the exceedingly pure solution containing the zinc goes to electrolytic tanks lined with sulphur and sand, which is another Tadanac innovation. The pure zinc is deposited by electrolysis upon aluminum sheets, from which it is stripped every 24 hours. From here it goes to the melting room, where the zinc sheets are melted and moulded into bars, which are weighed and stored or loaded directly into cars for shipment. The electrolytic division has a capacity of 400 tons of refined zinc per day.

The lead reduction process is simpler but more spectacular. After being mixed with the proper amount of fluxing rock, the lead concentrates pass through 'sintering' machines, which eliminate the sulphur and agglomerate the fine charge into a sinter. The sinter is

each, for the electrolytic refinery. These anodes contain not only lead but also silver and gold and some traces of antimony, bismuth and arsenic. The dross is sent back to the blast furnaces.

In the lead tank-room the heavy anodes are suspended in an electrolyte, composed of lead fluosilicate and dilute hydrofluosilicic acid, which is contained in concrete tanks lined with a mixture of asphalt and sulphur. The lead is deposited upon specially prepared sheets of pure lead. The lead refinery has a capacity of about 450 tons of refined lead per day.

One of the most impressive operations in the whole plant is that connected with the smelting and converting of copper. The copper ore is smelted with fluxes in furnaces to eliminate the waste as slag, and concentrate the copper, gold

and silver, with some of the iron and sulphur, into a matte. The molten matte goes to converters, in which air is blown through it, oxidizing and thus eliminating the iron and sulphur. The coloured flames emitted in this spectacular operation never fail to impress the visitor.

The electrolytic copper refinery has a rated daily capacity of 70 tons. The impure copper anodes are suspended in an electrolyte composed of dilute sulphuric acid and copper sulphate. The copper is deposited as pure metal which is melted and moulded into bars for shipment.

A visitor looks at the slimes from the electrolytic vats of the lead and copper refineries, and exclaims, "Surely this heavy gray mud is worthless!" The chemist patiently explains that in the mud remain all the gold and silver, together with antimony, bismuth and arsenic impurities. In a series of furnaces the antimony and bismuth are separated and recovered, leaving a mass of glistening dore metal which begins to look like something worth while.

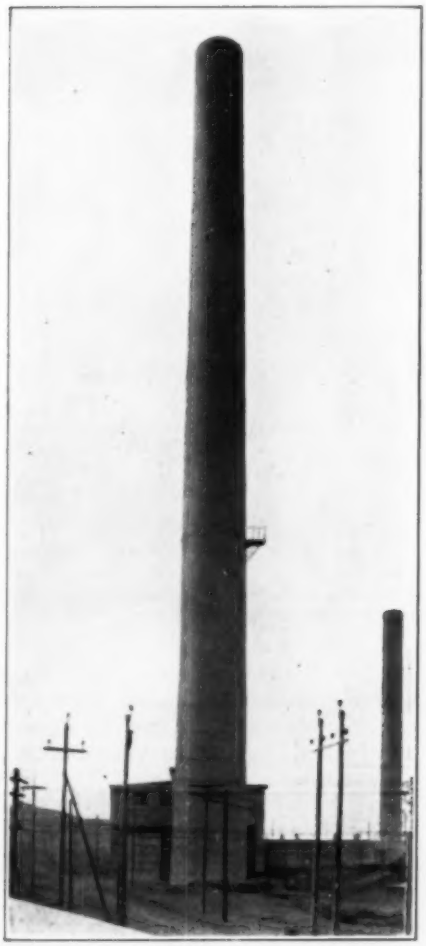
Upon this metal the magic of the metallurgist is again brought to bear. When treated with hot sulphuric acid, the silver is dissolved, leaving the gold as an insoluble residue. The clear silver solution is treated by electrolysis, the silver being deposited upon copper plates. This pure silver and the gold sludges are separately washed, dried and melted into bars for shipment.

Hughes Brothers photograph.

Eight tons of silver ready for shipment. This aristocratic metal scorns the freight cars and travels by express with an armed guard.

The products of the Tadanac refineries have come to have an enviable reputation for purity and command a premium in the markets of the world. Analysis of the refined products shows that the zinc is 99.956 per cent. pure, the lead 99.9946, silver 99.95, and gold 99.9 per cent. About one-fifth of the total production is sold in Canada, the rest being disposed of in the markets of Europe, Asia and South America. When one considers that the annual production of the company has a value of over $30,000,000, it is evident that their foreign shipments play an important part in maintaining Canadian exports at a high level.

Naturally the expansion of operations at Tadanac calls for a constantly in-

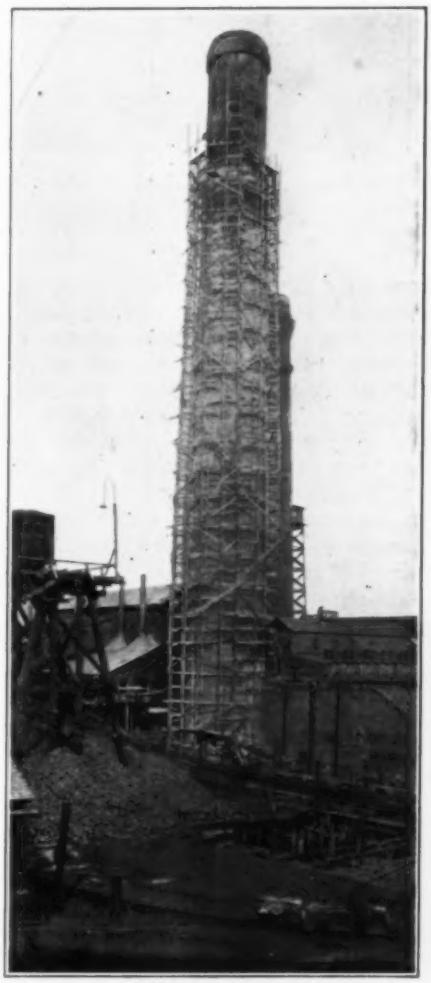


Hughes Brothers photograph.

The new chimney for the zinc plant has a height of 409 feet and a diameter of 28 feet. It has been calculated that the several stacks of the plant carry off about 45,000 tons of gases per day.

creasing supply of hydro-electric energy. The West Kootenay Power and Light Company, a subsidiary of the Consolidated Mining and Smelting Company, has developed in three plants on the Kootenay River, near Nelson, a maximum of 167,000 horse-power. Power for the operations at Kimberley is obtained from the East Kootenay Power Company which has harnessed the Bull River Falls on Bull River and the falls at Elko on the Elk River. The West Kootenay Power and Light Company has commenced construction of a plant at Cora Lynn Falls on the Kootenay River and has announced its plan to harness the Adam River. Each of these projects will develop an additional 30,000 horse-power. A much larger undertaking included in this company's programme calls for the harnessing of the Pend d'Oreille River about a mile above its junction with the Columbia. It is expected that ultimately about 300,000 horse-power will be developed there.

One of the most serious problems confronting any large reduction plant is to find a method of disposing of the



Hughes Brothers photograph.

Even the big stacks occasionally need repairs. This one is being fitted with a new cement overcoat. The coke piled in the foreground will eventually go to feed one of the smelter furnaces.

Progress Studio photograph.

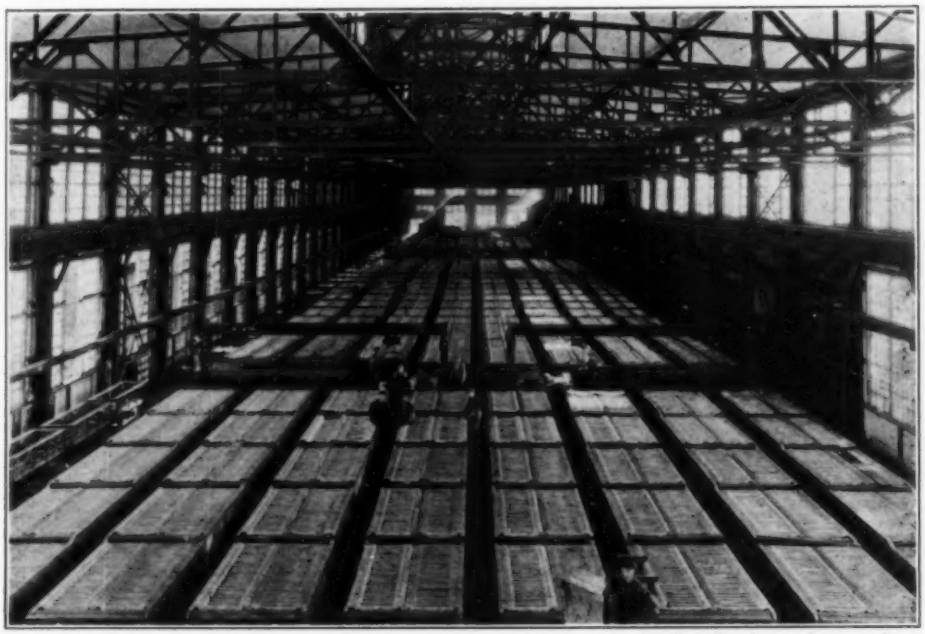
The headworks of number 3 plant, looking down the Kootenay River. The wing-dam on the left is 1,500 feet long. "The pool" below this plant is famous for its trout fishing.

gases from the roasters, sintering machines and blast furnaces. In the past the fumes from the Tadanac plant were adversely affecting the growth of some types of crops in the area contiguous to Tadanac. The company's policy has been to pay for all damage which could have been caused by smoke. Some time ago farmers on the American side of the international boundary, which lies about 12 miles to the south of Tadanac, complained of smoke damage. This question was under consideration for some time by the International Joint Commission, which has since made its report to the Governments of the United States and Canada.

With this problem of smoke control the company is earnestly trying to cope, not merely to prevent contamination of the atmosphere, but also to reclaim the values which go up the flues in the form of dust and gases. In the recovery of value from gases the company has been a pioneer, and it is a fact well known among metallurgists that the Cottrell plants or smoke-treaters at Tadanac are as modern and effective as any other such plants in existence.

A treater consists of a series of flues in which high-tension wires, carrying current at 60,000 volts, are closely strung, and through which the smelter gases are passed. The current causes the precipitation of the dust upon metal plates. Not only is a public nuisance thus avoided, but much valuable metal is recovered.

The search for a solution of the smoke problem has led to some interesting situations, and incidentally has brought an important new industry to Tadanac. In 1916 the company built the first unit of an acid plant to convert sulphur dioxide, the destructive agent in the fumes, into sulphuric acid. By this plan the sulphur dioxide could be removed from the gases, but the question was how to dispose of the acid. The quantity of gases was so vast that the resultant products could neither be sold nor stored. If the acids were stored, they would eventually find a way to the Columbia River and cause more damage than by the dispersal of gases in the atmosphere. The company began an intensive search for phosphate deposits in British Columbia, its research department kept in touch with the developments in the fixation of nitrogen, and experts were sent to examine fertilizer plants in other countres, all these being parts of a comprehensive scheme to convert the waste gases into valuable chemical fertilizers on a large scale. These fertilizers have already been



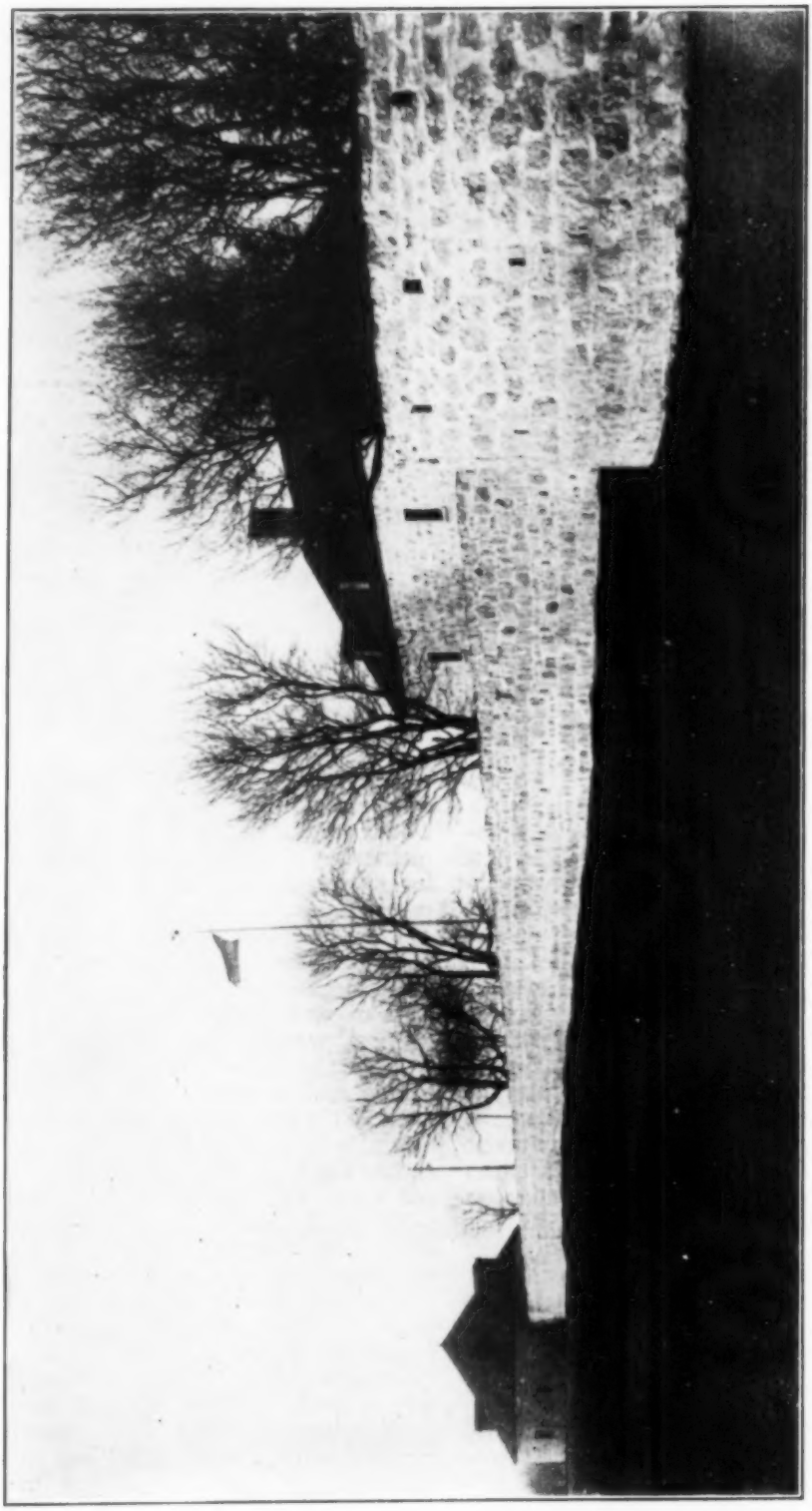
Hughes Brothers photograph.

A section of the lead refinery. The anodes of lead bullion weigh about 360 pounds, and have a life of eight days, during which time two crops of cathodes of pure lead are removed.

tested out in about 1,500 test plots throughout the prairie provinces.

The first unit of this gigantic undertaking, which went into operation late in December, 1930, cost in the neighbourhood of $10,000,000. It is possible that the whole plant will be running by the time this article is published. It is anticipated that this new enterprise may some day equal in importance the company's metal-producing activities. The programme provides for a liquid-air plant to extract nitrogen from the atmosphere; an electrolytic plant to derive hydrogen from water; a synthetic ammonia plant for "fixing" the nitrogen and hydrogen as liquid ammonia; an enlarged acid plant to produce 350 tons of sulphuric acid daily, thereby utilizing much of the waste sulphur dioxide gas which now goes up the smoke-stacks; plants for converting the ammonia into ammonium sulphate fertilizer, and for converting the phosphate rock from the company's deposits near Fernie into phsophoric acid, which in turn will be converted into various phosphate fertilizers. The new undertaking will be western Canada's first venture in the production of commercial fertilizers on a large scale. Already the plant at Tadanac has begun to turn out large quantities of chemical foods and tonics for the hungry soils of the western wheat lands.

The little smelter acquired in 1906 has grown and expanded until it is a great industrial organization and a force of the first magnitude in the metallurgical world. Its activities extend beyond the boundaries of British Columbia and its agents may be found in most of the new mining areas of Canada, and also in parts of Africa. Amongst its scouts there are some prospectors of the old type, carrying packs or travelling with pack mules, but the scouting force also contains technically trained men equipped with aeroplanes for penetrating the remoter parts of the Dominion. These mineralogists are the explorers of our century. Like the "coureurs-de-bois" of old, they are men whose spirits feel the stir and fever of high adventure, but their impelling purpose is not "to get skins" but to find metal for our metal-consuming, metal-hungry age.



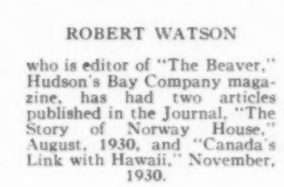
Lower Fort Garry. South wall and south-east and south-west bastions, with store and fur loft showing. At the immediate left of south-east bastion is the point at which Louis Riel and his party scrambled over when they raided the fort.

One Hundred Years of Lower Fort Garry

By Robert Watson

LOWER FORT GARRY, the only stone fort in Canada of the early fur traders that remains intact and in good condition, is still an object of interest to the visitor and particularly to the historically inclined.

This old post of the Hudson's Bay Company, 18½ miles north of Winnipeg, occupies a commanding position between the highway and the Red River, on the dividing line of the parishes of St. Andrew and St. Clement. The building was commenced in 1831 and completed in 1839. This year marks its centennial. To Chief Factor Alexander Christie, who was twice Governor of Assiniboia, goes the credit for the plans of the fort, while the stone work is the handicraft of Duncan McRae, a Hebridean stonemason, and his associate John Clouston.



ROBERT WATSON

who is editor of "The Beaver," Hudson's Bay Company magazine, has had two articles published in the Journal, "The Story of Norway House," August, 1930, and "Canada's Link with Hawaii," November, 1930.

Governor Christie served the Hudson's Bay Company for a period of 38 years, and the Christie family, of whom he was the head, has given over 240 years service to the Company.

Duncan McRae came to Canada from Stornoway in 1838. In addition to his work at the Lower Fort, he also built the stonework of the Upper Fort when that post was reconstructed, the combined work occupying his time for almost 10 years.

St. John's Cathedral (the old one) Kildonan Church, Mapleton Church, the Donald Murray home in Kildonan and Archdeacon Cowley's Church (now St. Peter's Hospital) and many others are all fine examples of McRae's craftmanship and industry. He died in 1898.

The reasons for the building of the old Stone Fort are set forth in a resolution of the Council Meeting of the Hudson's Bay Company Northern Department of Rupert's Land, held at York Factory in 1830: —

"The Establishment of Fort Garry being in a very dilapidated state—its situation not sufficiently centrical—most exposed to the spring floods—and very inconvenient in regard to the navigation of the river, and in other points of view, it is Resolved, 51st—That a new establishment to bear the same name be formed on a site to be selected near the lower end of the Rapids—for which purpose tradesmen be employed, or the work done by contract as may be found most expedient, and, as stones and lime are on the spot those materials to be used instead of timber, being cheaper and more durable."

Chiefly because of the flooding, it was the intention of Governor Simpson to abandon Upper Fort Garry altogether and make Lower Fort Garry the Company's headquarters, but this intention was not carried out.

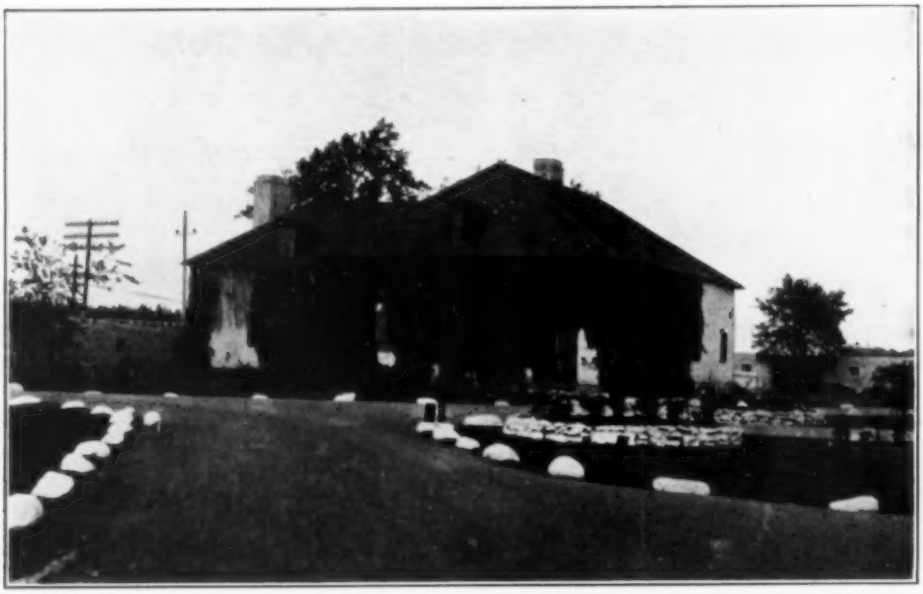
The walls of the Stone Fort are of limestone, three feet thick, about seven and a half feet high, and they extend for 2,000 feet, including bastions, forming a quadrangle which encompasses some four and a half acres of land. The bastions, four in number, are 55 feet in diameter.

Alexander Ross in his "Red River Settlement" tells us that the first stone building in the country was a small powder magazine at Upper Fort Garry, built in 1830.

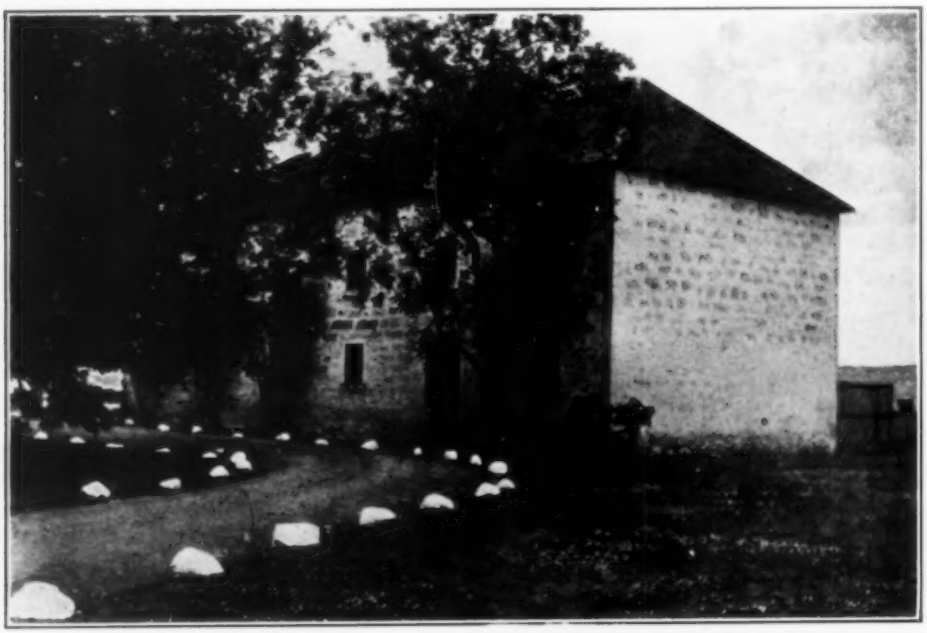
The stone for the two forts was quarried close to the Lower Fort site, and that required for the Upper Fort was hauled on sleds drawn by oxen up the Red River during the winter months when the river was frozen over. Loading and unloading was done by native labour.

The stone, set in boxes of rough boards, was raised into place by the use of a windlass and block and tackle. The actual building was done during the summer months. The men camped beside their work, going home only for the week-ends.

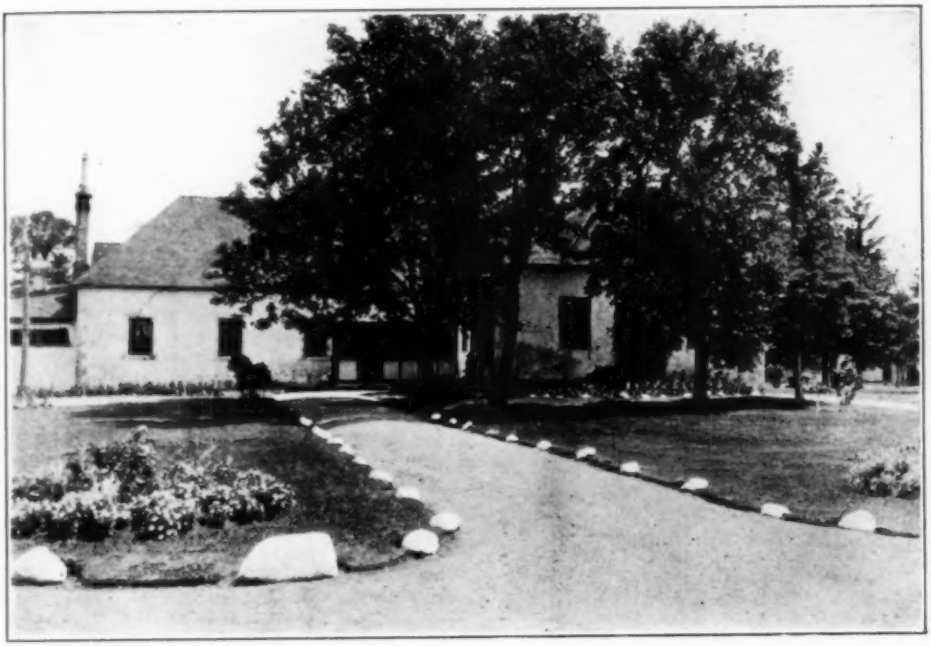
The Hon. Donald Gunn tells us that Governor Simpson and his family passed the winter of 1833-34 at the Stone Fort. Whether or not the date be correct, it is definitely known that the Lower Fort



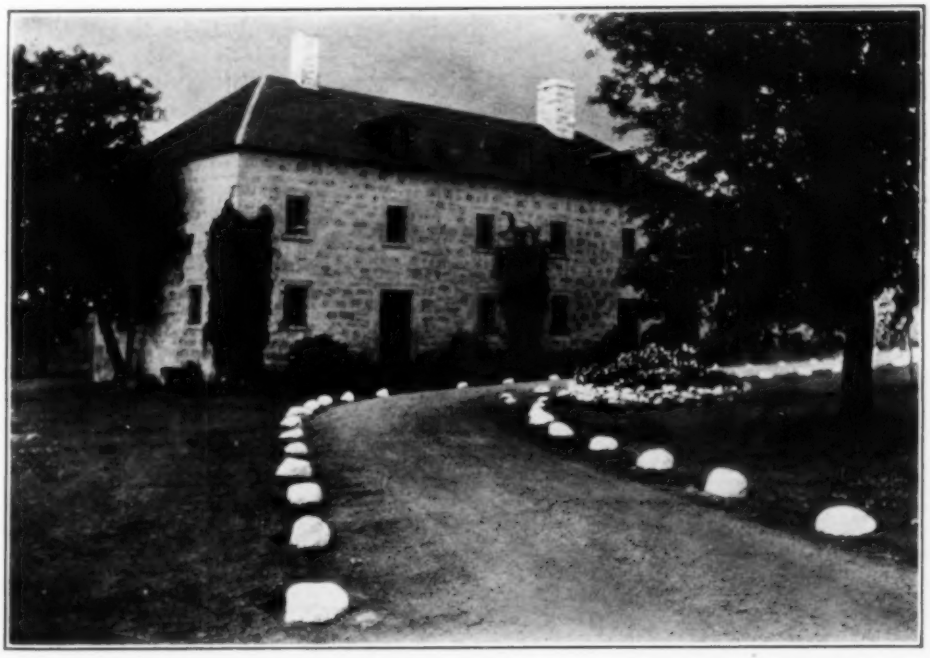
Men's House, situated just north of the western entrance to the Fort. Here the servants used to pass their spare time and hold their convivials. In 1870 it became a soldiers' canteen and later still was used as Rupert's Land Women's Asylum. It is built of stone.



Front view of the penitentiary, used by the government of Rupert's Land. Later Men's Quarters. Still in splendid preservation. Prisoners' stone pile can still be seen at the extreme right of the picture.



West view of the famous residence at Lower Fort Garry. Numerous old relics of the early days of the Stone Fort are preserved here.



Front view of saleshop and fur loft situated close to the south wall of the Fort and near the point at which Louis Riel and his cohorts scrambled over when they made a midnight raid on the Stone Fort early in 1870.

Chief Factor Alexander Christie, twice governor of Assiniboia, under whose supervision Lower Fort Garry was planned. The Christie family has contributed over 240 years service to the Hudson's Bay Company.

was the Red River home of Sir George Simpson on several occasions.

Alexander Ross refers to its exclusiveness and rural beauty:—

"Lower Fort Garry is more secluded; although picturesque, and full of rural beauty. Here the Governor of Rupert's Land resides, when he passes any time in the colony. To those of studious and retired habits, it is preferred to the Upper Fort."

On June 13th, 1846, Paul Kane states he found Sir George Simpson and several gentlemen of the Company there.

Like the Upper Fort, Lower Fort Garry takes its name from Nicholas Garry, Deputy Governor of the Hudson's Bay Company, 1822-1835.

Within its grey, limestone walls may still be seen the store, the fur warehouse, the quarters of the officers and men, the old penitentiary with its iron-barred windows, the remains of the earliest wooden stockade, the chimney of the old bakehouse built by the prisoners in the penitentiary for the baking of their own bread; the asylum for women and the foundations of the barracks that sheltered the soldiers of the 2nd Quebec Regiment of Colonel Wolseley's expedition against Louis Riel in 1870. The

Penitentiary and north wall of the Stone Fort. This prison was in charge of Colonel Sam L. Bedson and was the government gaol for Rupert's Land. No capital punishments were ever carried out at Lower Fort Garry.

names of many of those soldiers, carved by themselves in odd moments when stationed there, can be traced clearly on the stone pillars of the eastern gateway.

In the centre of the quadrangle is the Governor's residence, a quaint wooden structure with old-fashioned rooms, fireplaces and Carron stoves and heaters. This residence is still in good condition and in daily use.

Two muzzle-loading, three-inch cannon guard the main entrance to the residence. These bear the dates, 1807 and 1810. These obsolete weapons point across the Red River on whose rapid waters the merry shouts and choruses from the brigades of canoes and York boats were wont to ring, as the voyageurs raced for the landing place at the now dried-up creek immediately to the south of the fort, hurrying in anticipation of a few days' or perhaps hours' enjoyment, ere they started off again, meeting old friends and sweethearts, and making merry with dance and convivial.

A larger cannon, a relic of the Upper Fort, stands by the flagstaff.

The fort's bell, bearing the date 1850, hangs, iron bound, from the branch of tree in front of the residence.

An old weather-beaten limestone sundial stands on the lawn, immediately south of the residence, set there probably

The bell, bearing the date 1850, which hangs from a tree in front of the eastern entrance to the residence. Its tongue no longer proclaims the hours of labour and refreshment, the changing of the years and the passing of men.

The Residence. Here have been housed Sir George Simpson and Governor Alexander Grant Dallas. Council meetings of the Factors and Traders of the Hudson's Bay Company were held in the Governor's room. Many of Canada's Governors-General have been entertained under its hospitable roof. This splendid old building has been preserved as far as possible in its original state and is one of the most historically interesting places in western Canada.

Second Hudson's Bay Company store and fur loft, where much of the local business and trading of Lower Fort Garry was done. Still in good preservation.

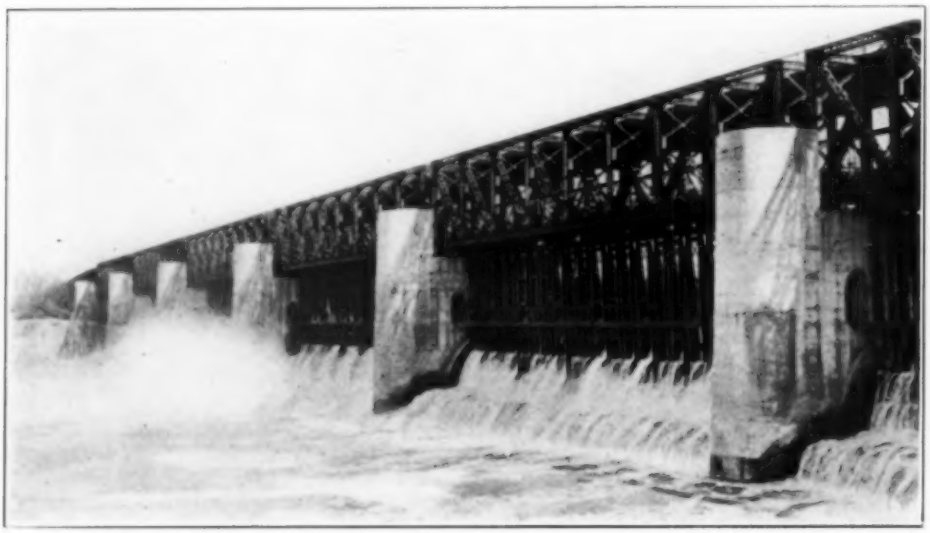
at the time of the building of the other stonework of the fort and still unerring in its recording of the time, regulated as it is by that eternal recorder of the days and hours—the sun.

Shady maples and pines, beautiful flower beds and green, well-kept lawns all go to complete a picture of sequestered quiet of a summer's afternoon, a picture of gardened beauty that has no equal in all Manitoba.

Soon after its construction, Lower Fort Garry became for a time the seat of the Government of Rupert's Land. Fur trade council meetings were held in the residence, ruled over by that far sighted leader, Sir George Simpson, who did so much to hold western Canada for the British Empire.

The annual fur brigades used to assemble at the Stone Fort.

At both Upper and Lower Fort Garry,



St. Andrew's Rapids, once a difficult piece of water to negotiate, now navigated by means of St. Andrew's Locks, about 2½ miles south of the Lower Fort.

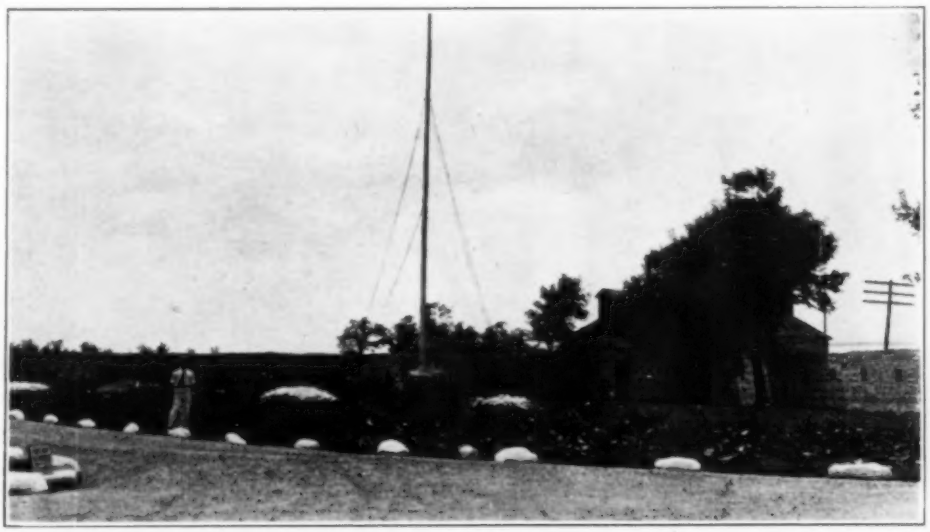
South-west bastion and part of western and southern walls. The cannon in the foreground was part of the defences of Upper Fort Garry until that fort was dismantled in 1882.

on a "secret mission", Colonel Crofton sojourned in 1846 with 329 men, 18 officers and 17 women and 19 children, and remained in garrison for a year.

The "secret mission" is believed to have been the protection of the colony in the possible event of trouble over the Oregon question of that time.

Experimental farming was undertaken on a large scale at the Lower Fort and much of the actual ground is still under cultivation.

Roderick Campbell, a racy historian of his time, gives a vivid description of the surroundings in "The Father of St. Kilda", a book hardly known at all as



South-west bastion and south wall of the Stone Fort, showing loop-holes in walls. This bastion was used as a washhouse and cookhouse by the first soldiers to occupy the Fort, Colonel Crofton's Sixth Royal Regiment of Foot, 1846-1848. Later it became a storehouse.

Upper Fort Garry gateway (1850). Preserved at the demolition of Upper Fort Garry (1882) and presented to the City of Winnipeg, together with the little park upon which it stands, by the Hudson's Bay Company in 1897. One of western Canada's historic places.

an historical record of the Red River because of its strange title. He writes of the period around 1859:—

"A very large farm has been brought under cultivation in the immediate vicinity. . . . The experiment in agriculture proved most encouraging, and the harvest was everything that could be desired. The golden-tinted wheat, the plump round barley, the capital potatoes and turnips, soon showed the fertile capabilities of the Red River valley.

"Wild fruits were never lacking, gooseberries, strawberries, raspberries, plums, and different varieties of currants of excellent flavour. Wild flowers and blossoming shrubs bloomed in the woods and prairies as soon as the snow melted. Foremost were the anemones, which covered the yet frozen prairie with a lovely carpet of colours, each flower being provided by nature with a tiny cloak, which the slender blossom draws around it for protection when the winds are chill. And one might walk all day through fields of magnificent lilies. The red and June cherries were the first to put on their garlands, and then the woods were white with the profusion of their blossoms. The hawthorn followed—a dwarf tree—but so loaded with bloom that each seemed one single nosegay. But the spirea was the most beautiful of all, with its pink and white cone-shaped flower clusters poised on every branch.

Dog train in readiness to leave Lower Fort Garry for Norway House. Trading ceased at the Stone Fort in 1911, and the last dog train left in 1909.

Honeysuckles adorned the prairie; hops grew in abundance in the woods; winter berries, the partridge's favourite, grew in woods and plain alike."

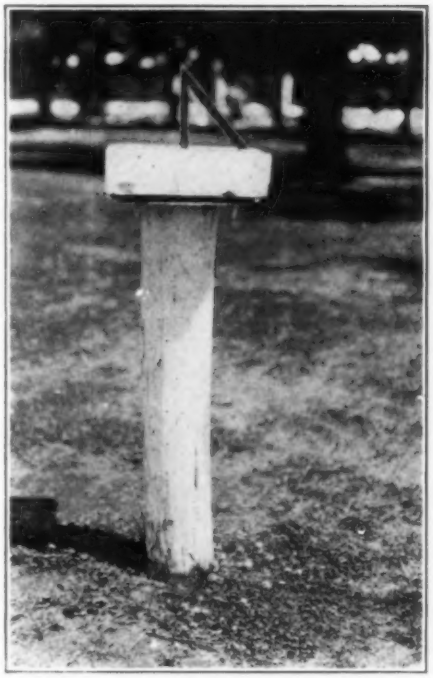
Of the trading and general life at Lower Fort Garry in 1859, Campbell also draws a lively picture:—

"Lower Fort Garry as I found it in 1859, certainly showed outward signs of future prosperity, however misty its past history might have been.

"... The residents in the Fort formed a very lively community in themselves. They had regular hours for the dispatch of business, and afterwards, to beguile the tedium of the long sub-Arctic nights, they met together for a few hours' jollification, when old Scottish songs were sung in voices cracked and sharpened by the cold northern blasts. . . .

"The fort stood in the middle of a two-mile reservation on the river bank. Outside of this limit many of the company's retired servants had settled, each on the plot of land given him to work and live upon. Amongst them, too, there were boisterous evenings.

"... My emporium was crowded every day with customers ready to purchase goods for cash, or to barter with their furs and agricultural produce. A record of all articles sold was entered in a sales



The old stone sundial situated on the lawn immediately south of the residence. It probably dates with the building of the stone work of the Fort. It shows signs of age, being weather-worn and partly ingrained with moss.

Upper Fort Garry about 1869, at the time when it was occupied by Louis Riel and made his headquarters. The Upper Fort was built in 1822, rebuilt in 1835 and enlarged and rebuilt in 1850. This fort was closely associated with the romantic story of the western fur trade, the Red River settlement and the beginning of Winnipeg.

One Pound Sterling 1820
HUDSONS BAY COMPANY.
Promise to pay the Bearer on Demand
the Sum of One Pound Sterl.g at York Factory in Ruperts Land,
on a Bill of Exchange payable Sixty days after Sight at the
HUDSONS BAY HOUSE, London.
London the 4 day of May 1820 For the Governor & Company
of Adventurers of England Trading into Hudsons Bay.
Secretary
Issued at YORK FACTORY, the 7th day of June 1821 by
Wm Williams Governor.
Accountant.
PRO PELLE PELLE

One pound note of the Hudson's Bay Company, familiarly known as a "Hudson's Bay Blanket." The notes were in two denominations, one pound and five shillings. English gold and silver were also circulated. Hudson's Bay money was withdrawn from circulation in 1870, at the time of the "Deed of surrender."

Ceremony of unveiling the bronze tablet of the Historic Sites & Monuments Board of Canada, commemorative of Indian Treaty No. 1, signed at Lower Fort Garry on August 3rd, 1871. Tablet unveiled June 13th, 1929. Left to right sitting:—Chief Factor C. H. French (at that time Fur Trade Commissioner for the Hudson's Bay Company); His Honour Judge Howay of the Historic Sites & Monuments Board; Mr. F. G. Simpson (nephew and godson of Sir George Simpson); Hon. D. G. McKenzie, Minister of Mines and Natural Resources of Manitoba.

book. The currency was sterling, and consisted chiefly of promissory notes by my Company, redeemable by bills of exchange granted at 60 days' sight on the Governor and the Committee of the company in London. These bore a high premium in the United States. The notes were of two denominations, one pound and five shillings. Besides the notes, there was a good deal of English gold and silver in circulation."

Meteorological and scientific observations were made at the Lower Fort for the benefit of posterity. Many distinguished explorers, on their journeys north, stopped off at the Lower Fort for a brief respite.

It was the holiday resort of prominent officers of the Company for many years. Dr. John Rae completed his final plans for his Franklin Relief expedition at the Stone Fort.

Brigade of York boats. Lower Fort Garry was one of the landing places of the York boat brigades which came in from Edmonton, Swan River district, Lac la Pluie (Rainy River) and other places, about the middle of every June, bringing furs and returning with supplies.

Some British Army pensioners were stationed there in 1848. A force of 120 men of the Royal Canadian Rifles occupied the fort in 1857.

During the Riel Rebellion the Stone Fort became a place of refuge for the loyalists. A filibustering and unsuccessful attempt on the part of a number of loyalists of various nationalities to capture the Upper Fort from Riel was partly arranged at the Lower Fort and a large cannon that lay there was commandeered for service and never returned to the Stone Fort.

In a few words, Roderick Campbell describes this raid:—

Upper Fort Garry in 1845, from a sketch by Chief Trader Alexander Hunter Murray. The oldest known sketch of Upper Fort Garry.

"(Dr. Schultz) being at liberty, he at once set about inciting the people to violence (against Riel) and was so far successful that even from the far-off Portage la Prairie recruits crowded to his rendezvous in Kildonan Church. But shrewdly forseeing consequences, he refused to accept the responsibility of controlling these misguided people who had gathered at his call—a heterogeneous collection of Canadians, Norwegians, Swedes, Danes, Dutch, Germans, English and Scotch, and their half-breeds, as well as representatives of three distinct Indian races: Crees, Salteaux and Ojibwas. Thus, leaderless, purposeless, shelterless (the thermometer stood at 55 degrees below zero), the warlike camp, under the influence of intense frost and intenser fear, disappeared with extraordinary rapidity, vanishing in every direction except that which led to Riel's quarters at Fort Garry, eight miles off. They had one very ancient piece of artillery with them, which they left behind them ingloriously in their flight.

"It had a serious sequel, however, for Riel secured as prisoners some 80 of Schultz's soldiers and kept them in durance vile under daily threats of death."

During the rebellion, Lower Fort Garry remained in the hands of the Hudson's Bay Company, practically undisturbed, while Riel occupied the Upper Fort, but the story is told of a midnight raid made by Riel and his lieutenants, Lepine and O'Donohue, and some followers, on horseback and in sleds, in search of the redoubtable Dr. Schultz whom Riel had sworn to shoot on sight.

The raiders clambered the south wall. The half-breed guard, either through fear or by preconcerted arrangement, fled precipitately on the first show of the enemy. Riel stalked into the residence, but he failed to find the object of his search there. Dr. Schultz in the meantime was in hiding a short distance south of the fort and made good his escape to Duluth in the dead of winter, across unfamiliar country.

At daybreak, Riel left the fort once more in the hands of the Hudson's Bay officer, William Flett.

The 60th Rifles and other regulars,

Lower Fort Garry as it stands to-day, photographed from the air. In the foreground is the Red River. North of the fort (right of picture) is where early experimental farming on a large scale was done in Rupert's Land. The Winnipeg-Selkirk highway runs across the picture, west of the fort.

with the Abyssinian Battery of the Royal Field Artillery, under Colonel Wolseley, arrived at the Lower Fort on August 23rd, 1870, and from there made their final march to Upper Fort Garry. When they reached the Upper Fort, the gates were wide open and Riel and his lieutenants had fled across the border.

Six companies of the 2nd Quebec Battalion wintered at the Stone Fort in 1870.

The Masonic Lodge, Lisgar No. 2, was instituted at Lower Fort Garry, on February 20th, 1871. The first masonic picnic in the west was held there on June 24th, 1871.

Treaty No. 1, the First Indian Treaty in the west between the Canadian Government and the Indians was made just north-west of the fort on August 3rd, 1871, with the Chippewa and Swampy Cree tribes.

The Royal Canadian Mounted Police had their headquarters at the Stone Fort during the first winter after their formation in 1873.

Lower Fort Garry was one of the first real shipbuilding yards in western Canada. The "Chief Commissioner" was built there in 1874, although as a ship she was not much of a credit to any shipbuilding yards.

Trading ceased at the fort in 1911, and since that time Lower Fort Garry has been preserved as a relic of old Red River days.

Photographs illustrating this article are by courtesy of the Governor and Committee of the Hudson's Bay Company, Royal Canadian Air Force, Mr. A. Caskey, C. P. Dellaff and Mr. Robert Watson.

The Taj Mahal, tomb of Arjumand Banu Begum, better known as Mumtaz-i-Mahal, wife of the Emperor Shah Jehan. It was constructed by 20,000 men directed by master-builders from all parts of the East. The lines of the Taj are exquisite. Some critics have objected to the effiminacy of the architecture; but in answer it has been said, "The Taj was meant to be feminine. It is India's noble tribute to the grace of India's womanhood." (Havell.)

Agra and the Taj Mahal

By E. C. WOODLEY

THE city of Agra is situated on the right bank of the river Jumna, about 300 miles from its confluence with the Ganges. It was founded by the Mogul Emperor, Akbar, in 1558 and is closely associated with the most brilliant period of the Mogul Dynasty.

On the left bank of the river, opposite the Taj Mahal, may still be seen the ruins of another city. This city, of which little remains, was very ancient although, so far as we know, it was never of any great importance. In 1505 it was largely rebuilt by the Afghan ruler, Sultan Sikandar Lodi, whose son, Ibrahim Lodi, was defeated and slain by Babar at the battle of Panipat in 1526. Babar, subsequently, made his capital at Agra.

E. C. WOODLEY

is a well-known Canadian educationalist and author, whose first contribution to the Journal, "The March of the Ten Thousand Greeks", appeared in the August, 1930, issue. From 1902 to 1905 Mr. Woodley was Professor of English at the London Mission College, Calcutta, and Principal of the same institution during 1906 and 1907. His interest in Indian life and thought is indicated by one of his books, "Outline of the Sankhya and Vedanta Systems of Indian Philosophy."

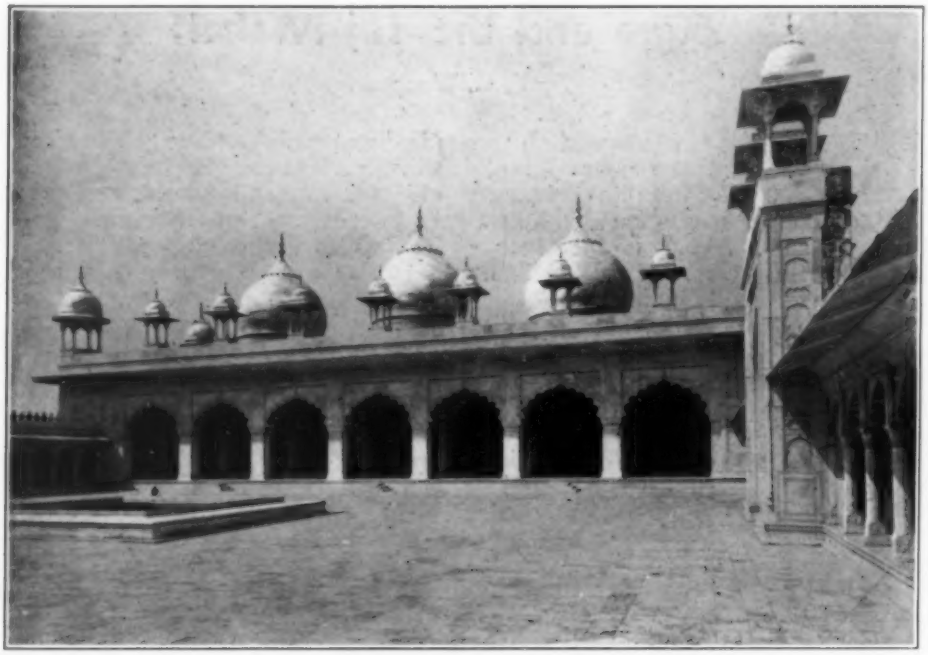
Babar is one of the most picturesque figures in oriental history. Despite a measure of savagery, and a tendency at times to considerable personal indulgence, such as might reasonably be expected of one descended directly from Tamerlane and Genghis Khan, he was a man with many admirable traits. He managed to get a great deal out of life. When not fighting or carousing, he enjoyed nothing better than fellowship with nature, and his interesting "Memoirs" are full of descriptions of flowers, birds, and natural beauties which attracted him. He was a strange mixture of poet and warrior. His life was a highly adventurous one and his frank and simple account of his career and observations is a delight to read.

Babar decided to make Agra his capital but did so on strategic grounds and not because he liked the site. Here are his own words as he stood on the banks of the Jumna and surveyed the scene. "It always appears to me that one of the chief defects of Hindustan is the want of artificial water-courses. I had intended, wherever I might fix my residence, to construct water-wheels, to produce an artificial stream, and to lay out an elegant and regularly planned pleasure-ground. Shortly after coming to Agra, I passed the Jumna with this object in view and examined the country to pitch upon a fit spot for a garden. The whole was so ugly and detestable that I repassed the river quite repelled and disgusted. In consequence of the want of beauty and of the disagreeable aspect of the country, I gave up my intention of making a garden house; but as no better situation presented itself near Agra, I was finally compelled to make the best of this same spot. . . . In every corner I planted suitable gardens, in every garden I sowed roses and narcissus regularly and in beds corresponding to each other".

Babar's city has gone but one of his gardens still remains, the Ram Bagh, to which tired residents of Agra still resort for comfort and refreshment. The body of Babar was temporarily buried in this garden, until it could be transferred to a still more beautiful one near Kabul, which he had designated as his last resting-place.

Humayun, the son of Babar, had a very chequered life. He had the cheerful disposition of his father but was dogged by misfortune. Alternately king and fugitive, he ended his life by falling down a staircase at Delhi. There is no memorial of his reign in Agra but the plan of his tomb influenced the builders of the Taj.

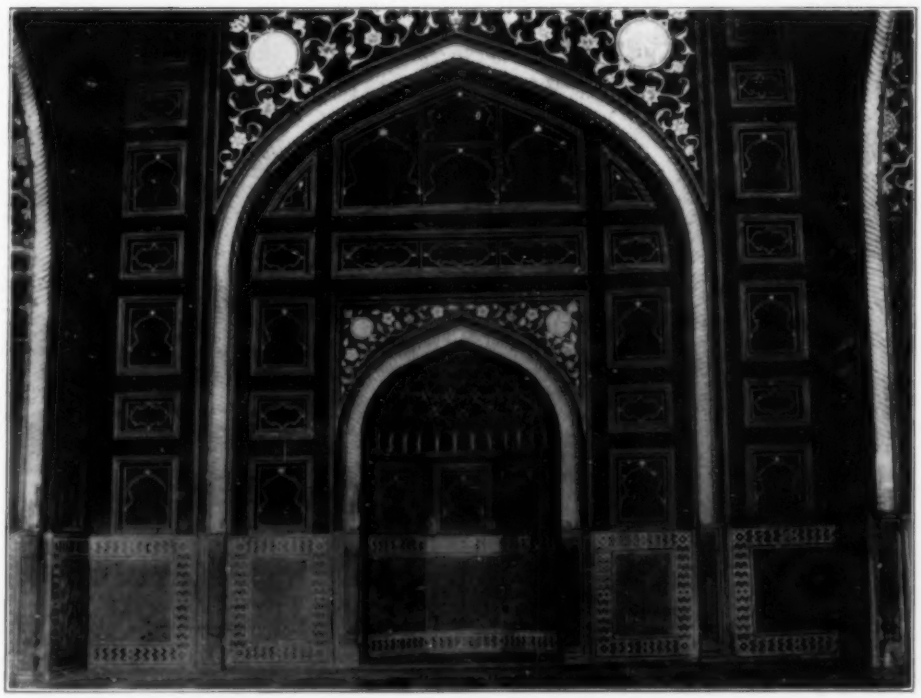
Humayun was followed by his son, the great Akbar, who was born when his parents were in exile. Akbar was the most enlightened of all the Mogul emperors, and was of a strongly religious turn. His toleration of all faiths made him many enemies in a court predominantly Moslem; but Akbar had a winning personality, and retained his throne to the end of a life fairly long for an oriental monarch. His first capital was built at Fatehpur-Sikri, but he deserted this site before its magnificent palace and mosque were completed, and



The Pearl Mosque is one of the noblest religious structures ever built. The master builder sought to express by that simplicity which marks the highest art, the purity of deep religious feeling. The appeal of the building is found in its perfect proportions and not in any ornamentation, for it possesses practically none.

began to erect the great fort at Agra, which, under his immediate successors, became the most glorious group of buildings in the East. Very little of Akbar's work remains, as the later building of Jehangir and especially those of Shah Jehan led to the removal or modification of a great part of it.

The fort, with the palaces and other buildings which it encloses, is a monument to the Mogul Emperors. Four of them took part in its construction, although the finest work was done by Shah Jehan. The inner buildings are surrounded by red sandstone walls, 70 feet in height, and about a mile and a half in circuit. While at one time the fort had some value as a protected area, it was never a strong military work. The walls were really only a fitting ceinture for the group of magnificent buildings which form the Mogul palace. Most of these buildings are of the purest white marble, often most elaborately inlaid in intricate design with precious stones. The pavement is marble, while everywhere one sees that marvellous stone fretwork in screens and parapets which, added to the beauty of line, gives these buildings the appearance of jewel caskets, and makes them appear much smaller than they really are. We cannot describe them in any detail, but will glance at a few that we may get some idea of the splendour of these Eastern kings. The first building entered, after passing through the Hathi Pol, or Elephant Gate, is the Dewan-i-Am or Hall of Public Audience, where the larger court functions were held. The Emperor sat on a raised marble platform at one side. Grated passages near this platform gave the ladies of the court an opportunity of seeing what was happening. A door immediately behind the platform gave admission to another court, the Macch-i-Bhawan, beyond which were the more private rooms of the palace. The Dewan-i-Khas, or Hall of Private Audience, is a small but very beautiful building to which privileged guests were brought. Near it is a small court, with a pavement divided into squares of black and white marble, where the oriental game of

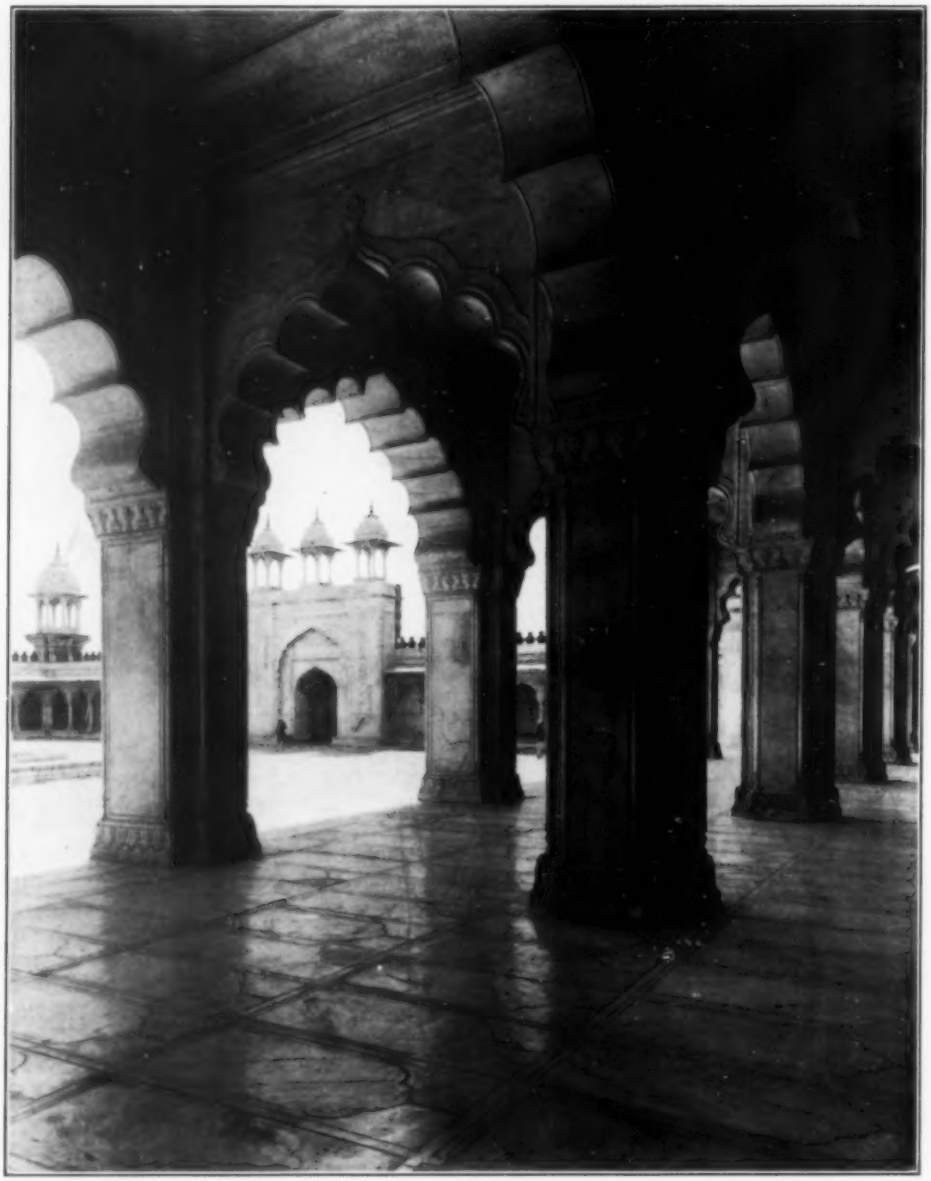


The eastern of the two mosques which flank the Taj Mahal, is not a mosque in the strict sense of that term, as it is not used for worship. It was built to balance the real mosque which is west of the Taj. The construction of this building, known as the Jemaat Khane or House of Meeting, is a good illustration of the Mogul love of symmetry in buildings.

Pachisi was played, with living figures as the counters. From a side of this court one enters the dream-like Saman Burjh or Jasmine Tower, constructed by Shah Jehan as a boudoir for his queen. This is one of the two glories of the palace. From its open gallery, the roof of which is supported by delicate shafts of marble, richly inlaid with carnelian and other rare stones, in a design of intertwining jasmine, may be seen the perfect outline of the Taj Mahal apparently rising from the placid waters of the Jumna. The beauty of the view of the Taj Mahal from the Saman Burjh, especially if one has the privilege of standing there when the moon is rising, silvering the wonderful building with its soft light, makes one catch his breath.

A mere catalogue of the buildings and courts of the palace would be a lengthy affair, but there is one other structure which must be mentioned, because it has a beauty of another sort. It is the Moti Musjid or Pearl Mosque, the royal place of worship. Constructed of the purest marble, without any ornamentation, the building is not large and a pearl in its delicate beauty is the only fitting image for it. Its lines are the purest Saracenic. The enclosed portion, beyond the court-yard, has seven arched entrances and is surmounted by three domes, so perfect in form and so glittering white that they appear almost like bubbles ready to vanish into the blue sky above them. A traveller who had visited many lands and who knew many of the world's most famous buildings, once said of it: "The Moti Musjid can be compared to no other edifice that I have ever seen. To my eye it is absolutely perfect. It is a sanctuary so pure and stainless, revealing so exalted a spirit of worship, that I felt humiliated as a Christian to think that our noble religion has never inspired its architects to surpass this temple to God and Mahomet".

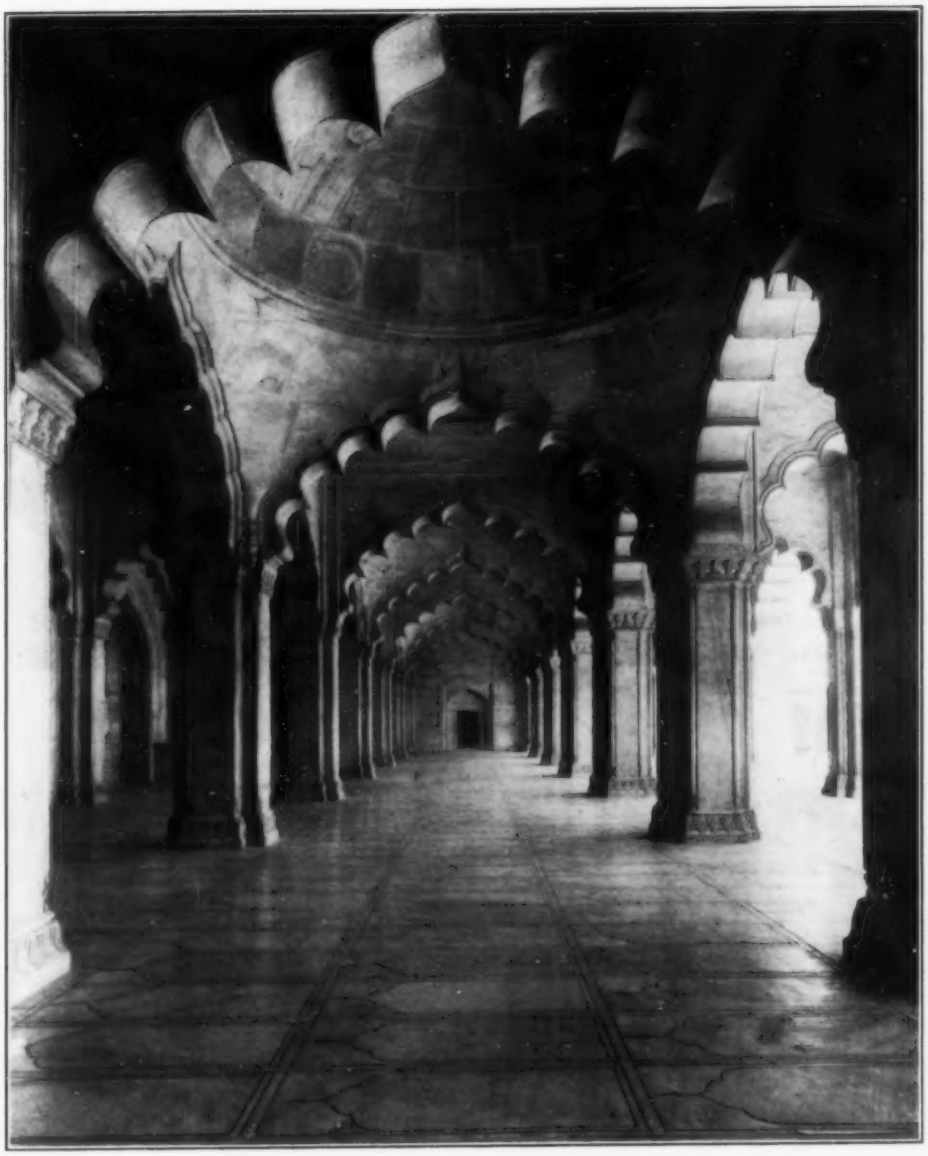
Wonderful as the palace of the Moguls is, it is not the chief glory of Agra. That



Looking from the interior of the Pearl Mosque to the courtyard, with the gate crowned by three delicate, domed turrets, on the right. The oblong divisions in the marble floor of the mosque are outlined in a darker stone. When the worshipper prostrated himself, the head touched the point of the inlaid pattern.

glory is the Taj Mahal, the dream-like tomb which Shah Jehan built for his favourite wife, Arjumand Banu Begum, more generally known as Mumtaz-i-Mahal, the Crown of the Palace.

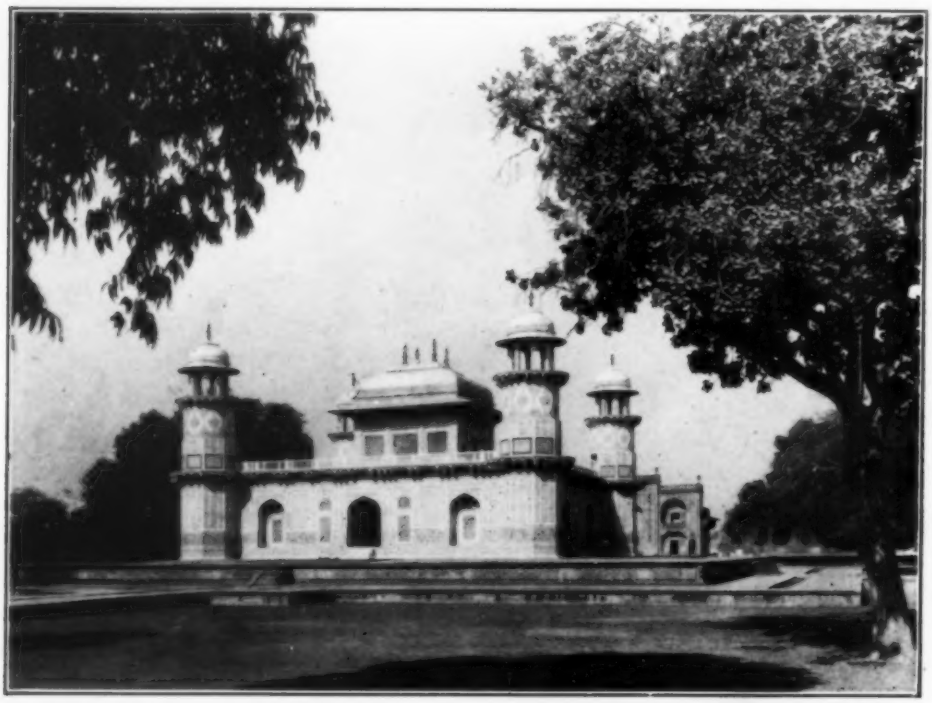
The story of the love of Shah Jehan and Arjumand Begum is one of the great romances of history. It was a youthful affection. Arjumand's father, Asaf Khan, was the brother of the Empress Nur Mahal, the wife of Jehangir, and Arjumand grew up under the influence of that beautiful and strong-willed woman who was the real power in the Mogul



This picture shows the interior of the Pearl Mosque, and affords some idea of the chaste beauty of this place of Moslem worship. The pillars which sustain the arches are single blocks of marble.

court of her time. It was an influence for good in that court and many a time it checked the impetuous schemes of her husband. Arjumand and Prince Khurram afterwards the Emperor Shah Jehan, must have played together as children and an early attachment ripened into ardent mutual affection. They were married in 1612 and for 18 years, until her death, Mumtaz-i-Mahal as her husband named her, held her place unchallenged in the heart of Shah Jehan. His love for her was deep and unchanging. She accompanied him on his campaigns and became greatly beloved by her people for her deeds of kindness and mercy. Her death was a terrible blow to the Emperor. The court

was thrown into mourning, and for two years no music was allowed, no perfumes were used and life in the Mogul capital became sombre indeed. Meanwhile the stricken Emperor nursed his sorrow, while he planned a memorial for his lost consort which would strain the resources of one of the wealthiest empires in the world and which was destined to be probably the most perfect structure ever raised by human hands.



The tomb of the Itmad-ud-daulah, or High Treasurer of the Emperor Jehangir. His name was Mirza Ghas Bey, and he was only a Persian adventurer when he came to Akbar's court. While crossing the Great Desert, his wife gave birth to a daughter, who afterwards became the Empress Nur Mahal, aunt of the Empress Mumtaz-i-Mahal. The tomb was erected to her father's memory by Nur Mahal.

On the banks of the Jumna, a few miles below Agra, was an old garden, originally owned by the Rajah Jey Singh. It was in full view from the gallery of the Jasmine Tower in the palace, where the royal lovers had often walked together in the bright eastern moonlight. It is not unlikely that together they had visited the garden many times, for all the Great Moguls loved flowers, birds and running water.

When the romance of his life was over, Shah Jehan bethought him of this old garden and there buried the Crown of his Palace, his dead Empress. But it was not enough that she should rest beneath the cypresses beside the smooth-flowing Jumna. Over her burial place he would erect a tomb which should be the glory not only of Hindustan but of the world. He would fashion it of marble, white as her own soul, and adorned with precious stones to tell of the richness of their love, and she would rest in her tomb, beneath a sheet of pearls worth a king's ransom.

So the royal lover dreamed for a time and then awoke to translate his dream, into fact. Architects were summoned men of many lands, and were invited to submit designs for the Taj, her crown in death. There was no consideration of labour or cost. The treasury of the empire was open. The design finally accepted was that of a certain Ustad Isa, a native of Shiraz in Persia. Builders came from far and near, and materials were drawn from all parts of India and

beyond. The marble was quarried at Jaipur. Slowly the marvellous building rose from its platform beside the river—slowly, because every stone must be perfect in itself and in its setting. Twenty thousand men laboured for 22 years before the great tomb and the smaller building near it were completed, and during all these years the Emperor himself watched and, at times, directed the workmen. When the work was done and the Taj stood perfect it was found that the cost had been 185 lakhs of rupees, which in present currency is the astounding figure of nearly nine millions of dollars. But somehow, when you look at the Taj, you do not think of its cost. It is a creation of beauty, the expression of an unquenchable love, and beauty and love are things beyond all price.

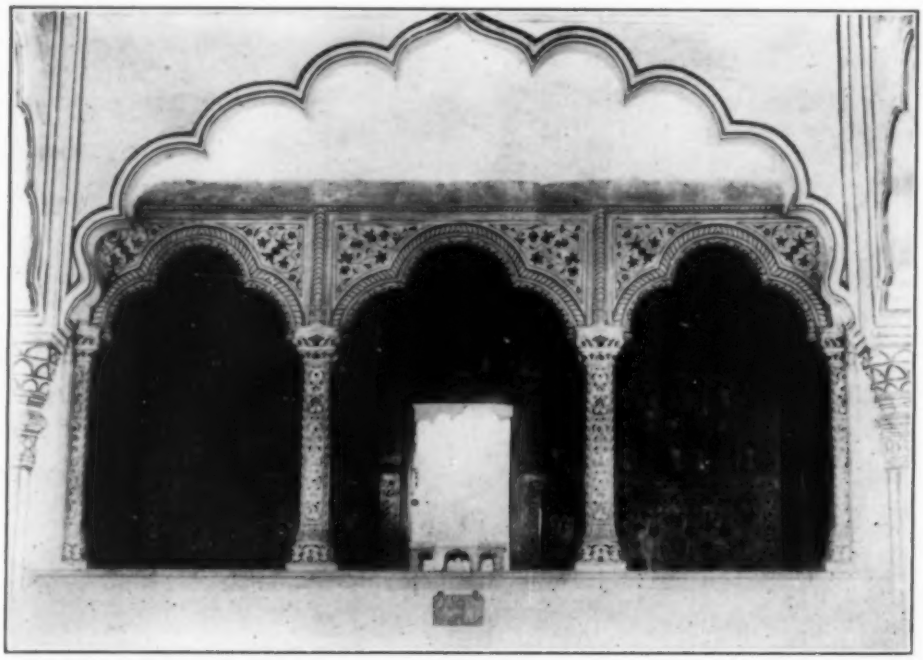
One does not care to descend to figures, which seem such dead things when one is speaking of a building "designed by Titans and finished by jewellers" but a few may help us to get some idea of the size of the Taj which looks as if it were ready to rise from the river-side and float away like the carpet of eastern story. The garden enclosure is 1,000 by 1,860 feet. The plinth of white marble on which the building rests is 18 feet high and is an exact square of 313 feet on a side. From the floor to the point of the archway is 89 feet, to the top of the parapet, 114¾ feet, to the springing of the dome, 139½ feet, to the summit of the pinnacle on the dome, 243½ feet.

The central chamber of the Taj contains the tombs of the royal pair, that of the Empress being exactly in the centre. They are of white marble delicately carved in an exquisite design of flowers, and are surrounded by a pierced marble

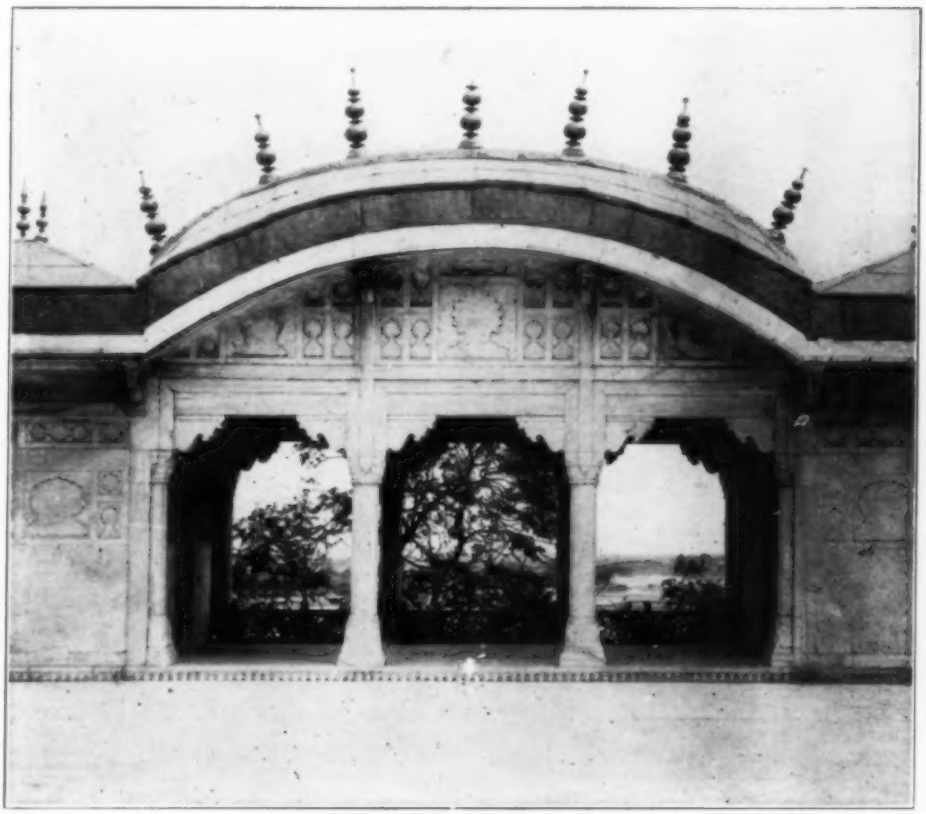
The gate to the garden in which the Taj stands, is a structure of perfect proportions and dominating charm. An inscription in Arabic invites those who are worthy to enter the Gardens of Paradise. In view of the beauty of the sight which greets one who has passed through the gate, the inscription is singularly suitable.

The Mogul Emperor Shah Jehan. On his tomb in the Taj beside that of his wife appears the following inscription which sets forth his high position: "The glorious tomb and sacred resting-place of His most exalted Majesty, honoured as Razwan, having his abode in Paradise and his dwelling in the starry heaven, dweller in the regions of bliss, the second lord of the Qiran, Shah Jehan, the king, the valiant..... 1076 A.H." (1666 A.D.)

Arjumand Banu Begum, better known as Mumtaz-i-Mahal, or the "Crowned One of the Palace," the wife of the Mogul Emperor, Shah Jehan. She is the Lady of the Taj. This picture has been made from a rare miniature.



The throne of the Mogul Emperors stood in the alcove at the end of this hall, the Dewan-i-Am, or Hall of Public Audience. The Peacock Throne, crusted with jewels, was made by the French goldsmith, Austin de Bordeaux. It formed part of the loot which Nadir Shah of Persia carried off after his successful plundering expedition of 1739.

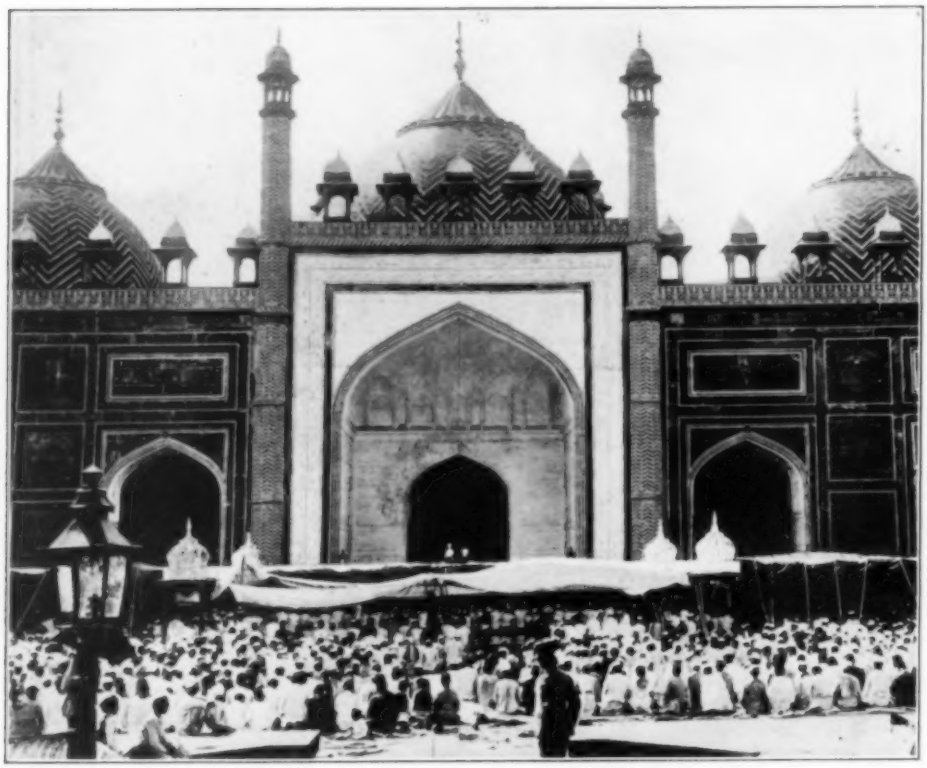


This is the famous Golden Pavilion in the Palace at Agra. Adjoining it, on a projecting bastion, is the Samman Burh or Jasmine Tower, containing the private apartments of the Empress Mumtaz-i-Mahal. It was to the balcony of this tower that the dying Shah Jehan was brought, and here, in sight of the Taj, which, in ethereal loveliness, embodied his great passion, the proud Mogul Emperor met his conqueror, death.

screen which was 10 years in the making. On the tomb of the Empress is the inscription: "The illustrious sepulchre of Arjumand Banu Begum, called Mumtaz-i-Mahal, died in 1040 A.H." (1630 A.D.) At the head of the tomb are the words: "He is everlasting, He is sufficient", and on one side: "Near unto God are those who say, our Lord is God". In the course of a rather elaborate inscription on the tomb of Shah Jehan is the prayer: "May his tomb ever flourish and may his abode be in the Heavens". The tomb has stood in all its beauty for nearly 300 years and the world will be the poorer when it passes into ruin.

What are one's impressions of the Taj? Much will depend upon the mood of the onlooker. To any who view it, with some knowledge of the love which it enshrines, the building seems to be more than cold and lifeless stone. It is something living, throbbing in its beauty, and its spell cannot be readily broken. It is the spirit of the Empress Mumtaz-i-Mahal herself, speaking across the centuries. Surely Edwin Arnold felt this when he wrote,

Not architecture! as all others are,
But the proud passion of an Emperor's love
Wrought into living stone, which gleams and soars,
With body of beauty-shrining soul and thought;
. . . . . as when some face
Divinely fair unveils before our eyes—
And the blood quickens and the spirit leaps,



The courtyard of the Jami Musjid, built by Jahanara, the daughter of Shah Jehan. The mosque is spoiled in large measure by the peculiar zig-zag decoration of the minarets and domes.

And will to worship bends the half-yielded knees,
While breath forgets to breathe. So is the Taj.

Shah Jehan's life passed into eclipse at the end. A serious illness and the possibility of his death led him to name his eldest son by Mumtaz-i-Mahal, the impetuous and much-loved Prince Dara, as his regent. This action aroused the jealousy of his brothers, especially Aurunzib, a gloomy fanatic. A conspiracy was formed and an army raised. Prince Dara was defeated and killed, and in the end, after the usual amount of intrigue and bickering, Aurunzib seized the fort and made himself master of Agra and the empire. Shah Jehan was a prisoner in the palace for the rest of his life, tended gently by his daughter, Jahanara who was passionately devoted to her father. An unknown writer has thus described the last scene in the great romance:

"On brilliant empire supervenes the seven-years' imprisonment. He before whom the whole world bowed is thankful and proud to win at last the long sweet faith and service of a single daughter of his own. From the throne of the world to a prison-cell! What were the memories and what the hopes, that thronged the shadows in which Shah Jehan spent those last long years?

"Here is the end.

"At his own earnest entreaty, as they tell to this day in Agra Fort, the bed of the dying man has been carried to the balcony beyond the Jasmine Tower, that overhangs the river. Jahanara weeps at her father's feet. All others have withdrawn, for no service remains to be rendered to the august captive. On the edge of the carpet lie only the shoes and regal helmet put off for the last time. For Shah Jehan, the uses of the world are ended. Silence and night and the mourning moon, half-veiled in her scarf

The tomb of the Emperor Akbar, greatest of the Moguls, is at Sikandra, about five miles from Agra. The tomb has four storeys, the lowest being 320 feet square. In the centre of the highest, which is enclosed by walls of fretted marble, is a solid block of the same stone which represents the real tomb below. It is delicately carved with a design of flowers and texts, while on the sides are inscribed the 99 names of God.

of drifting cloud envelop the sad soul of the gentle princess.

"But Shah Jehan himself! To him the moment is glad with expectation. The sucking sound of the river below the bastions fills him with the sense of that other river beside which stands his soul. Yonder, beyond the bend, like some ethereal white-veiled presence, stands the Taj,—her taj, her crown, the crown he wrought for her. But to-night it is more than her crown. To-night it is herself. To-night she is there in all her old-time majesty and sweetness, yet with an added holiness withal. To-night, beyond the gentle lapping of the waters, every line of the stately form speaks tenderness and peace and all-enfolding holiness, waiting for that pilgrim—with weary feet, bent back, and head so bowed, alas!—who comes, leaving behind alike palace and prison, battlefield and cell of prayer, to land on the quiet shore on the yonder side of death.

"Truly a royal passing—this of Shah Jehan! King in nothing so truly as in a woman's heart—crowned in this, the supreme moment, of her to whom he gave the crown of all the world."

Mount Chown lies about 25 miles northwest of Mount Robson, in the Cariboo district of British Columbia. It was named after Dr. Samuel Dwight Chown, who for some years filled the high office of General Superintendent of the Methodist Church in Canada. The picture was photographed by Miss Ruby E. Chown, of Toronto, from a painting by Rev. J. Williams Ogden, of Vancouver.

Player's Please

The name Player on a cigarette guarantees the quality and purity of the tobacco.

It is more than a name —it is a reputation.

Cork tipped or Plain ends

"It's the tobacco that counts."

PLAYER'S
NAVY CUT

Editor's Note Book

Canadians who grumble over traffic regulations may be interested in an incident in Seoul, the capital of Korea. (Seoul, by the way, is now known as Keijo). The local regulations prohibit motor traffic on a certain narrow street. A foreigner, unaware of this, drove his car down the street until stopped by a policeman. Being warned, he backed out. "That" said the policeman "is a fine of four yen." The foreigner resignedly paid up. "And" added the policeman, "for you it will be eight yen; for not only did you drive in, but you also drove out."

* * *

The world is being so flooded with books on Central Asia that Kashgar, Urumchi and the Heavenly Mountains are almost as familiar names to the reader as Banff, Jasper and the Grand Canyon. One of the more recent of these books has an amusing chapter recording the impressions left on the Tatar mind by the visit some years ago of the two sons of Theodore Roosevelt, who were known, because of their obvious importance in their own country, as the Ameriki dukes. Tatars were puzzled that men of such high degree should wear shorts. The Roosevelts had brought opera hats, to wear on state occasions. "This is a strange matter" said the Ta-jen "that the Ameriki hats, when become flat and useless, can be restored to shape by pressure from the inside; yet with the art to make hats like this, why do they not make hats that will resist pressure from the top?"

* * *

Six years hence Canada, and particularly Montreal, will no doubt mark in some appropriate way the 100th anniversary of the opening of the first Canadian railway, which ran from St. Johns on the Richelieu River to La Prairie on the St. Lawrence opposite Montreal. There is preserved in the Chateau de Ramezay in Montreal a curious picture of the little train that ran on this primitive railway, and one learns from the files of contemporary newspapers the intense interest aroused by its first trip. In the library of Dalhousie University, Halifax, is preserved a manuscript journal by the New Brunswick novelist, James De Mille, describing his journey from St. John, N.B., to Quebec, where he joined one of his father's sailing ships for a trip to Europe. He went from St. John to Boston by boat, then by railway and stage to Lake Champlain, by boat to St. Johns, by this first Canadian railway to Montreal, and down the St. Lawrence by steamboat to Quebec. The journey took as long as it would to-day to travel from Vancouver to London.

* * *

Toward the end of August, a group of historical societies in Minnesota, will celebrate at Grand Portage, that historic spot near the western end of Lake Superior, the 200th anniversary of the arrival there of Le Verendrye, the Canadian explorer. The occasion will be marked by the reconstruction of the old dock at Grand Portage, which dates back to the period when the North West Company had its headquarters at this then remote trading post, and when Grand Portage was the jumping-off place for the vast region west of Lake Superior, where the Hudson's Bay Company and the North West Company carried on a fierce rivalry for the valuable fur trade of the western tribes.

About the middle of September the International Congresss of Geography will meet in Paris. A very interesting and instructive programme of papers has been arranged for, and also a series of expeditions, each under the direction of an expert, to different parts of France of particular interest to the geographer. The Canadian Geographical Society will be represented at the Congress by its Honorary Vice-President, Dr. A. P. Coleman of the University of Toronto, and by several other members.

* * *

Among the group of Canadians who will attend the meeting in China this autumn of the Institute of Pacific Relations is one of The Canadian Geograph-

ical Society's Vice-Presidents, Dr. J. Mackintosh Bell. Dr. Bell also expects to spend some time in Siberia. The leader of the Canadian group to the China meeting is the former Canadian Minister to the United States, Hon. Vincent Massey, who is also a member of our Society.

* * *

Members of the Canadian Geographical Society occasionally express the fear that the editors of the Journal will before long exhaust the list of subjects that may appropriately be discussed in such a periodical. Quite apart from the fact that a geographical journal may properly regard the world as its field, the choice of suitable subjects within the four corners of the Dominion is practically inexhaustible. Geography is a very broad subject, and Canadian geography may be considered from a variety of angles, physical, historical, economic. Take a single section of the country—the region about Hudson Bay. How much do most of us know about it? There is the discovery and exploration of the bay, the stories of Hudson, Button, Foxe, James; the pathfinders who blazed trails inland from the bay, Hearne, Kellsey, Hendry, Cocking; the overland expeditions from French Canada to the bay by Albanel, Jolliet, Radisson, De Troyes and Iberville; the physical characteristics of Hudson and James bays, and the various rivers emptying into them; the economic resources of the region and its several parts; the maps of this part of the country, how the information they contain was built up, and by whom; the relationship of the region to its native inhabitants. Apply the same analysis to other parts of Canada, east and west and north, the Maritimes, the valley of the St. Lawrence, the Niagara peninsula, the Great Lakes, the prairie provinces, the Rockies and Selkirks, the north country, British Columbia, and it will be realized that whatever problems may confront the Journal, lack of appropriate subjects or its articles will never be among them.

* * *

The Champlain Society's latest publication consists of a volume of "Documents relating to the Early History of Hudson Bay" edited by Dr. J. B. Tyrrell. This collection, though it relates to the early days of Hudson Bay, has a certain timeliness, apart from its interest to scholars, because of the fact that Hudson Bay is being brought much closer to the life of the average Canadian than it has been in the past. A few years ago the man who had stood on the shores of Hudson Bay was something of a notability. To-day there is no particular distinction in having made that journey, and to-morrow it will have become a commonplace. The Hudson Bay Railway is practically completed to Port Churchill, and before long a branch line will no doubt run to York Factory. The Ontario Government is rapidly carrying the Timiskaming and Northern Ontario Railway to Moose Factory. Well-equipped modern hotels are to be built at the latter place and at Churchill, for the use of those having business on the bay, and the man who finds even the railway too slow as a means of reaching these once remote fur-trading posts, can fly there in a few hours. It is only a question of time until week-end excursionists will be picnicking on the rock on which Samuel Hearne carved his name a century and a half ago, or hunting around Charlton Island for possible relics left by Henry Hudson 320 years ago.

* * *

Apropos of the reference to Peter Aylen in the article on the Ottawa River in the February number, a correspondent draws attention to what J. L. Gourlay has to say of that redoubtable pioneer in his "History of the Ottawa Valley". "Peter Aylen" says Gourlay "was known as King of the Shiners during his lumbering operations. Originally a sailor, he was a well-read old gentleman when we made his acquaintance, a thinker and not deficient in natural oratory that sometimes came out on the hustings at election contests." Peter Aylen has a number of descendants in Ottawa and the Ottawa Valley and, as one of them has pointed out, his influence upon this part of the country may be traced in the lakes and rivers and waterfalls that still bear his name.

Amongst the New Books

ORDERS AND INQUIRIES ABOUT BOOKS REVIEWED HERE SHOULD BE ADDRESSED TO THE BOOK PUBLISHERS

The Vinland Voyages. By Matthias Thordarson. New York: American Geographical Society. 1930. $2.

This paper, by the Director of the National Museum of Iceland, translated by Thorstina Jackson Walters, and edited by Halldor Hermannsson, with an Introduction by Vilhjalmur Stefansson, is an important addition to the literature of the discovery of America by Norsemen. The paper is devoted in the main to the voyage of Thorfinn Karlsefni in 1003, and discusses various points, mainly geographical, as to most of which it seems unlikely that any final conclusion will ever be reached.

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The Mastery of the Sea. By Cyril Field. Toronto: Blackie & Son. 1930. $1.

An admirable account, authoritative without being technical, of the rise and present state of the British Navy, its ships and its men. As a background we have a short history of Naval armaments in the days of the Romans, the Vikings, fighting ships and sea-fights in the Middle Ages. The development of the British Navy is traced in Tudor times, and from Elizabeth to Victoria, the evolution of the Ironclad and of naval gunnery, the submarine and the submarine mine, and in a final chapter the author deals with the manning of a warship. The book is very well illustrated with both full-page plates and smaller pictures.

* * *

The Valley of the Richelieu. By Arthur H. Moore. St. Johns: E. R. Smith Company. 1929. $1.

President Moore, of the University of King's College, Halifax, has made an interesting study of one of the historic valleys of Canada. From the days of Champlain the story is carried down through the French period, the American Invasion of 1775, the War of 1812-14 and the Rebellion of 1837-38. Also turning from war to peace, the writer describes the building of the Chambly Canal and Canada's first railway between St. Johns and La Prairie.

Greenland, Its Nature, Inhabitants and History. By Th. N. Krabbe. Translated from the Danish by Annie I. Fausboll. Toronto: Oxford University Press. 1930.

Dr. Krabbe, who served for a score of years as medical officer of the Danish Government in Greenland, has given us in this large and splendidly illustrated book a very complete account of that little-known country. Greenland has a history that goes back to the year 986 when Eric the Red brought a colony of Icelanders to become the first white inhabitants of this immense Arctic island. That colony, with its churches and monasteries and farms survived for 500 years. Thereafter Greenland reverted to the Eskimo for three centuries, and early in the 18th century the Danes again established themselves there. To-day there are about 300 white inhabitants and 15,000 Eskimo in the colony. The book describes the country, its climate, geology, vegetation, animal life, industries, administration, schools, churches, language and literature. Altogether the most comprehensive account of Greenland that has yet been published.

* * *

National Parks and the Heritage of Scenery. By Vaughan Cornish. London: Sifton, Praed & Company. 1930. 5/-.

This is an account of the very interesting project now on foot to create a series of National Parks in Great Britain, and embodies the author's own ideas as to where these parks should be set apart, from Glen Affric and the Hills of Skye to the Sea Cliffs of Cornwall. In the second part of the book he discusses pictorial grouping in agricultural and urban landscape, going for illustrations as far afield as Kyoto, the old capital of Japan, and the Cape of Good Hope. There is a passing reference to the National Parks of Canada as illustrating the policy that should be followed in Britain.

Cross Roads in Ireland. By Padraic Colum. Toronto: The Macmillan Company. 1930. $3.50.

What better guide to Ireland could one ask than Padriac Colum. Beginning in Meath and Cavan, he takes us by devious roads to the Boyne and to Laracor where Swift wrote books and loved Stella, to Fermanagh and Enniskillen, Armagh and Portadown, and the country of Saint Patrick, to the vale of the Liffey, Wexford and Waterford and the ancient kingdom of Ossory, to Cork and Limerick in the south, Blarney Castle, the Shannon and the home of Goldsmith. It is a journey that one would not have missed, filled with the atmosphere of the Ireland of other days, memories and traditions, harpers and ballad-singers and the songs of exiles, kings and shepherds, poets and politicians.

* * *

The Biology of Civilization. By C. C. Walker. Toronto: The Macmillan Company of Canada. 1930. $3.

Mr. Walker, who is now an officer of the Royal Canadian Air Force in Ottawa, and who before the War did extensive field work as an entymologist in the Malay States, Burma, the Philippines and China, has brought together in this book the result of years of study. "The idea behind the book" he says "is that history can be shown to be the record of the evolution of social organization and that such evolution conforms to definite law." In developing this remarkable point of view, the author traces the story of man from the Palaeolithic Period down through the ages, taking into account the influence of geography and other factors. One gets the impression that Mr. Walker is what might be called a scientific Calvinist. Not every one will agree with his conclusions, but the book will well repay careful study.

* * *

Industrial Britain. By Albert Wilmore. Toronto: Clarke, Irwin & Co. 1930. $1.50.

Dr. Wilmore, in this latest volume in Harrap's New Geographical Series, has done an excellent piece of work. It is a survey of industry in Great Britain, not so much for the specialist as the layman. The book is divided into five sections, devoted respectively to the Basic Industries, coal, iron and steel, shipbuilding; the Semi-basic Industries, including coal-tar, soaps, glass, paper, leather, etc.; the Textiles, such as wool, cotton, silk and artificial silk, lace, etc.; Dependent Industries, clothing, food, printing and publishing; and Power and Transport. A bibliography and an index add to the book's usefulness.

* * *

High Tartary. By Owen Lattimore. Boston: Little Brown & Company. 1930. $4.

In 1927 the author travelled from Peking across the desert to Chinese Turkestan. When he reached Urumchi he managed to get a telegram through to his wife in Peking, who immediately started west by way of the Chinese and Russian railways to Semipalatinsk, and thence by sled to Turkestan. Mr. Lattimore and his wife then journeyed south through Turkestan and over the Himalayas into Kashmir and India. This bald statement of course gives no idea of the difficulties of the journey, or of its extraordinary interest, as Mr. Lattimore tells the story. The first part of his expedition, from Peking to Ku Ch'eng-tze, on the borders of Chinese Turkestan, had already been described in Mr. Lattimore's former book "The Desert Road to Turkestan." The story is completed in "High Tartary". Its interest is heightened by a series of excellent illustrations, and the end-paper map that has now become, fortunately, a feature of most books of travel.

* * *

A Canadian Geologist. By W. J. Loudon. Toronto: The Macmillan Company of Canada. 1930. $2.50.

It is seldom that a man of science enjoys the distinction of having his biography written and published during his lifetime. That honour has been paid to Joseph Burr Tyrrell, geologist and explorer and public-spirited citizen. It is an amazingly interesting story that Mr. Loudon tells, surveys on the prairies when Winnipeg was a small town and Regina, Saskatoon, Medicine Hat and Moosejaw had only just been born; discovering dinosaurs in the Red Deer country; meeting the last of the prairie buffalo; exploring the Barren Lands; pioneer days in the Yukon; travelling through Northern Ontario; writing books, editing journals, endowing travelling fellowships and medals. A full life, this of J. B. Tyrrell, and, one rejoices to know, a life that is still active and filled with promise.

A Collection of Documents relating to Jacques Cartier and the Sieur de Roberval. By H. P. Biggar. Ottawa: Public Archives of Canada. 1930.

Dr. Biggar has added one more to the several valuable contributions he has made to the literature of Jacques Cartier and his period of exploration in the New World. In this substantial volume he has brought together a large number of documents relating to Cartier and Roberval, dating from August, 1510, when Cartier stood godfather to a nephew, to April, 1575, when the death of his widow is recorded. Not the least interesting part of the book is Dr. Biggar's scholarly Introduction.

* * *

A History of the Vikings. By T. D. Kendrick. London: Methuen & Company. 1930. 18 -.

It is stimulating to turn from an account of a single though important episode in the story of the Vikings to a comprehensive and scholarly history of that adventurous race. Mr. Kendrick divides his history into two parts: The Lands of the Vikings, and The Vikings Abroad. Of the former the treatment of Early Scandinavia is particularly interesting. The latter is illuminating in its evidence of the extent of the Viking rovings—from Constantinople to Vinland. Mr. Kendrick, by the way, carries Vinland down to Chesapeake Bay. As Professor Gustav Storm had argued for Nova Scotia, this gives one a pretty wide geographical range. Oddly enough, in a book that bears everywhere the evidence of painstaking scholarship, Du Chaillu the traveller, who was born in Louisiana, is described as a French-Canadian.

* * *

The John Askin Papers. Edited by Milo M. Quaife. Detroit: Detroit Library Commission. 1931.

This is the second and concluding volume of these important Papers, the first volume having been published several years ago. It deals with the period 1796 to 1814, and consists of letters and other papers left by John Askin, who spent many years of his life in the western fur trade, first at Mackinac and later at Detroit. In 1802 he moved over to the Canadian side of the river and made his home in what afterwards became Walkerville. The Papers are a mine of information on the early history of Mackinac and Detroit, the fur trade, transportation on the Great Lakes, the War of 1812, slavery and are of particular interest to the student of the fur trade in Canada because of Askin's correspondence with such men as Alexander Henry, James McGill, Simon McTavish, Isaac Todd, the Frobishers, etc.

* * *

Food Supply in Russia during the World War. By P. B. Struve. New Haven: Yale University Press. 1930. $4.50.

This admirable study, in which Dr. Struve had the assistance of Professors Zaitsev, Dolinsky and Demosthenov, forms another volume in that ambitious project of the Carnegie Endowment for International Peace, the "Economic and Social History of the World War". It is of particular significance at this time because of the widespread interest in present-day Russia, her Five Year Plan, and her spectacular entry into the world's wheat market. This book deals authoritatively with such questions as organization of food supply, price policy, transport, grain monopoly, storage, price movements, consumption and embargoes.

* * *

Korea of the Japanese. By H. B. Drake. John Lane. London: 1930. 12/6.

Korea — The Hermit Kingdom — Chosen — Land of Morning Calm — they all relate to the same fascinating country which the Japanese are striving, with not very much success, to convert to western ideas of efficiency, sanitation and education. Korea, with its picturesqueness and its squalor, its ancient temples and its indescribable smells, its spectacular funerals and its comic opera hats—no one who has visited this land can ever forget it. Mr. Drake writes with sympathy and understanding and humour, and he gives us a vivid picture of Korea and the Koreans, their manners and customs, their glorious past and rather tragic present, the merits and demerits of Japanese rule. It is all intensely interesting.

* * *

A Wayfarer in Wales. By W. Watkin Davies. London: Methuen & Company. 1930. 7/6.

Something more and something less than a guide-book. "The writer of a guide-book feels that he must say a little about everything, and above all

maintain a sense of proportion; the wayfarer roams at will, refusing here to look at something which is of world-wide fame, turning aside there to pay homage to something of value that has hitherto remained without praise." As adequate guide-books to Wales are readily obtainable, it is well that we also have Mr. Davies to lead us into the byways that so often contain memorable things unknown to the highways. More than a score of very good pictures illustrate, the mountains and mountain-passes, valleys and waterfalls, ancient bridges and castles, that are amongst the memories a wayfarer will carry away from Wales.

* * *

Perfumed Tigers. By Maurice Dekobra. Toronto: Cassell & Company. 1931. $3.50.

Mr. Dekobra's admirable account of his travels in India, published two years ago in French, is now available in English, translated by Metcalfe Wood. The reader, anxious to understand something of that amazing peninsula, with its history and literature and art going back 3,500 years before Christ, its 320,000,000 people, 500,000 towns and villages, 2,000 castes, 50 religious sects, 179 distinct languages and 544 dialects, will welcome this unprejudiced narrative by a cultured Frenchman who is able to understand the point of view of both the East Indian and the Englishman in India. He tells us much that is profoundly interesting about Southern India, the North-west Frontier, Rajputana, Patiala, Nepal, Delhi, and also discusses with fairness and a good deal of insight the burning problems of present-day India.

* * *

A Merchant Venturer Among the Sea Gipsies. By Leopold Ainsworth. London: Nisbet & Company. 1930. 15/-

Nothing could better illustrate the fact that a book of travel may be equally entertaining and instructive whether the field it describes is large or small than the contrast between the present book and that of Mr. Dekobra. The latter deals with India, the former with a tiny island in the Mergui Archipelago near the point where Burma and Siam meet. Mr. Ainsworth spent several years on this fascinating island, his companions for the most part being a primitive type of Malay known as Sea Gipsies. Here he was visited by Richard Halliburton, and it is amusing to compare Ainsworth's account of the meeting with Halliburton's in "The Royal Road of Romance". While the book deals for the most part with the island of Casuarina, one bears also something of the neighbouring parts of Burma and Siam and their inhabitants, human and otherwise.

* * *

Adventures in Arabia. By W. B. Seabrook. Toronto: McClelland & Stewart. (Blue Ribbon Books). 1930. $1.

It was a happy thought including Mr. Seabrook's book in the Blue Ribbon series, for it would be difficult to find any volume of travel published in recent years that makes more fascinating reading. He takes us among the Bedouins, the Druses, the Whirling and the Howling Dervishes, and finally the Yezidees or Devil-Worshippers, and tells stories that make much of his book read like a new collection of the Arabian Nights. And withal he describes the land and its people as they are to-day in a way that makes his narrative a very real contribution to our knowledge of Arabia.

* * *

The Ukranian Canadians. By Charles H. Young. Toronto: Thomas Nelson & Sons. 1931. $2.50.

Described as a Study in Assimilation, Mr. Young has in this book made a very real contribution to our knowledge of an important group in the Dominion's population. He tells us something of the racial origin of the Ukranian, where he came from, where he has settled in Canada, what he is doing there, and what sort of a citizen he is becoming. We have heard from time to time pessimistic predictions as to the danger to our people that lay in the influx of such immigrants as the Ukranians. It is encouraging to learn from this careful study that these fears are unfounded. Quite incidentally one welcomes this new and useful word, found in the Foreward, 'rurban', descriptive of life in a country town.

* * *

The Old China Trade. By Foster Rhea Dulles. Boston: Houghton Mifflin Company. 1930. $4.00.

On the close of the American Revolution, the adventurous seamen of the new Republic, and particularly those of New York, Boston, Philadelphia and Salem, shut out of old trade routes on

the Atlantic, boldly sailed around the Cape of Good Hope to China, carrying cargoes of furs, cotton, lead and other commodities, and particularly that curious root ginseng so highly prized by the Chinese, and bringing back Hyson and Bohea as well as silk, chinaware and spices. Out of the first voyage to Canton grew an ever-expanding commerce, which in time embraced not only China and Japan, but the greater part of the Pacific, from the seal fisheries of Alaska to the beche-de-mer and sandalwood of the South Sea Islands. Mr. Dulles tells, and tells very well, the story of one of the most fascinating periods of maritime commerce.

* * *

The Case for the Sea-Serpent. By R. T. Gould. London: Philip Allan. 1930. 12/6.

For 200 years or more seamen, fishermen and travellers have been reporting the appearance, in different parts of the world, of a monster that, for lack of a better term, has been generally called the Sea-Serpent. And for the most part these tales have been greeted with derision by the public and classed with such fabulous creatures as the Phoenix. One wonders why. The Sea-Serpent as it has been described is in no sense more improbable than such known inhabitants of the sea as the Sea-Bat. In any event, Mr. Gould, by sifting from the mass of evidence everything that has not all the ear-marks of an authentic narrative by a competent observer, has been able to present a reasonably convincing case for the existence in the sea of a monster "quite unlike any living creature at present known to science."

* * *

Between the River and the Hills. By Sisley Huddleston. Philadelphia: J. B. Lippincott Company. 1930. $3.50.

Mr. Huddleston, who has written so entertainingly of Paris, proves in this book that he can interpret as convincingly and even more charmingly the spirit of the Normandy countryside, and its people. The village Mayor, the keeper of the wine-shop, the garde-champetre, the cure, the farmer, the village carter, these and many others are here. So also are the ancient well, the mill, the chateau that speaks of other days, the apple orchard, market day, the legends that have grown about a venerable oak, the exquisite colours of weathered tile roofs, the crumbling grey stones of a Seine bridge, and the abiding peace that rests like a benediction on this bit of Normandy, so near and yet so infinitely remote from the turmoil of the capital.

* * *

In the Heart of the Northern Forests. By A. Radcliffe Dugmore. London: Chatto & Windus. Toronto: Musson Book Company. 1930. $6.50.

Anyone who has read Mr. Dugmore's previous books need not be told that he is a most entertaining and informative writer on wild animals. In this book he tells us a great deal that will be new to most of us about the beaver and his wonderful engineering, the mountain goat, mountain sheep, marmot, pika and other wild inhabitants of the Rockies, the moose of New Brunswick, the caribou of Newfoundland, the too friendly porcupine, and that strange marsupial, the American opossum. He writes with sympathy, humour and understanding, and he has put into this handsome volume, with its wealth of illustrations, the results of years of patient study in the home of each animal.

* * *

Cadillac. By Agnes C. Laut. Indianapolis: The Bobbs-Merrill Company. 1931.

Antoine de la Mothe Cadillac was one of the most picturesque figures in the history of New France. An officer of the Carignan regiment, he first settled in Acadia, then went to Quebec where Frontenac gave him an appointment in the colonial troops. He commanded the post at Michilimackinac, founded Detroit, and became Governor of Louisiana. Of the many incidents in his adventurous career a very readable account is given by Miss Laut. This is the first attempt to tell in any detail the story of his life.

* * *

With the Italia to the North Pole. By Umberto Nobile. London: George Allen and Unwin. 1930. 15/.

In his Preface to this account of the voyage of the ill-fated Italia, General Nobile mentions that it was published, though not yet in English, before the report of the Italian Inquiry Commission. In this English edition he does not attempt, except in one or two

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particulars in the Preface, to answer the various criticisms and accusations contained in the Report, very wisely allowing his own narrative of the expedition to speak for itself. One is bound to say that the book leaves one with a strong feeling that Nobile was more sinned against than sinning. Be that as it may, it provides an adequate and readable account of the origin and preparation of the Expedition, the flight to the North Pole, the catastrophe on the return journey, the anxious days on the ice pack, the rescue, and the return to Italy, an account that is illustrated with maps and pictures.

* * *

A Scandinavian Summer. By Harry A. Franck. New York: The Century Company. 1930. $4.

Mr. Franck, who has travelled and described many lands, from Siam to Patagonia, has now given us an entertaining account of his visit to the Scandinavian countries, Denmark, Finland, Sweden, Norway and Iceland. "I have tried," he says, "to give the atmosphere, the general mode of life of the countries visited, rather than to restate more or less well-known facts." Starting with Copenhagen, he takes us around the Danish mainland and over to Jutland and Fyn; flies from Stockholm to Finland, describes Helsingfors and the mysterious Finns; returns to Sweden with glimpses of life in the south, then up to Lapland; into Norway and down the west side of the peninsula to Trondhjem, Oslo and the fjords; and finally by steamer to Iceland, with its romantic past and eminently practical present.

* * *

The Spell of Acadia. By Frank Oliver Call. Boston: L. C. Page and Company. 1930. $4.

Dr. Call, who had already written a similar volume for the same series on French Canada, has put into these 400-odd pages much of the charm and romance of the Maritime Provinces, and particularly those parts of them that are associated with the Acadians. He writes of the River St. John, Fort Anne, Grand Pre, Prince Edward Island, La Tour and Charnisay and the fort at the mouth of the St. John, Louisburg, Shelburne, the Magdalen Islands, and many other historic points in the Maritimes. A map and numerous illustrations add to the interest of the book.

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